GAS JOURNAL, SEPT. 28, 1938

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Editorial Notes

Enterprise in Wales

OUR columns this year have recorded several accounts of enterprise—reconstruction of works, modernizing of distribution systems, and organization of sales programmes and policy—on the part of small undertakings in Wales. Among them was the outline given by Mr. E. M. Edwards, Engineer and Manager to the Port Talbot Gas Department, in his Paper to the Wales and Monmouthshire Association, of the developments made in his area of supply during the past six years to ensure first-class service to the consumer. In that period gas sales have increased by 43%, unaccounted-for gas has been reduced from 11% to 5%, sales of appliances have leapt from £4,000 to £18,000 a year, and gas prices have been substantially reduced—and this in a district of supply scheduled as a distressed area. Such results could not have been achieved without drive and confidence and the application of modern methods to the sale of a satisfactory and uniform product.

In a Paper, also to the Wales and Monmouthshire Association, published in the "JOURNAL" to-day, Mr. A. D. Howells, Engineer and Manager to the Abergavenny Gas Department, modestly recounts what has been done at Abergavenny since 1935, in which year he took over the management; and once again it is a story of what can be accomplished, in spite of keen competition in an area where the population has been declining for some years, granted courage and enterprise. Sales efforts are obviously wasted if the product in the first place is unsatisfactory and the distribution system inadequate to cope with the demand; and the first task Mr. Howells set himself was to modernize works which were obsolete. The new works were fully described in the "JOURNAL" for May 25 last, in which article were given the results of the new carbonizing plant, an installation of C.O.L. continuous vertical retorts which is giving trouble-free operation, all the work, other than coal handling to the overhead bunkers, being carried out easily by one man per shift. An account of the official inauguration was given in the "JOURNAL" for July 27. In his Paper Mr. Howells set out a comparison between the production costs of the last year's working of the old horizontal retorts and those of the first complete year of the continuous verticals. We assume that he had to pay more for coal in the year ended March 31 last, the period to which the latter figures relate, yet his production costs were less by 9·5d. per 1,000 cu.ft.; and "very soon after the new installation was producing gas the Department was receiving congratulations from its consumers on the remarkable improvement in quality."

It was at this stage that Mr. Howells arranged a canvass of the district and launched an advertising campaign, with results which were at once successful, many of the large shopkeepers who had installed electric lighting returning to the use of gas in modern equipment. From domestic consumers orders for appliances of all types were received, schools and shops installed gas heating, and several farms were equipped with gas lighting, cooking, and heating appliances. The figures given by Mr. Howells for new consumers gained and appliances fixed during the year ended March 31, 1935, compared with the figures for the year ended March 31 last constitute a fine record of progress. The new plant, too, made it possible to tackle the industrial load, and—this typifies the Author's confidence in gas—a potato crisp firm employing oil for cooking was persuaded to install an experimental pan fired by gas, the gas being supplied without charge during the experiment. So impressed was the firm with the results that it decided to scrap all the oil equipment and fix 24 gas fired pans. Other gas appliances, such as radiators for the stores, packing rooms, offices, and machines for sterilizing and drying the tins, quickly followed. Then the firm started a confectionery department; further gas equipment was installed, including switch operated gas lighting. For this load the basic price of gas was fixed by agreement for 15 years at 5d. a therm, subject to a rise or fall according to fluctuations in the cost of coal. The present price is 6·4d. per therm. That is one example of load building. Others were given in the Paper, including a foundry formerly employing suction gas which has changed over to town gas for power and town gas for core heating and for cutting, the load so far built in this case being 2 million cu.ft. per annum.

Mr. Howells has changed a state of declining gas sales into one of rapidly expanding output, and he is to be congratulated

on the manner in which he has created, through an efficient works and distribution system and the adoption of modern sales methods, an atmosphere of gas-mindedness in his area of supply.

Gas and the Builder

WITH the ever-increasing demand for the abolition of household drudgery, there is at the present time a closer association between the Gas Industry and the building trades than ever before. In days gone by the builder put up his house, and, some time later when the tenant wanted gas, the supply undertaking was obliged either to pull much of it to pieces again or else run the pipes openly across floors or up walls. Then matters advanced a short stage further and some builders consented to run a gas supply to the kitchen for the cooker and also, perhaps, if he was in expansive mood, to the dining-room for a solitary gas fire. This still precluded the use of gas anywhere else in the house without a considerable upheaval. Since then, however, a great advance has been made; and to-day all progressive undertakings are co-operating with builders to get new houses adequately carcassed while they are in course of construction. So far so good. A gas point in every room is very nice in theory, but is of little value in practice unless a full range of appliances is connected to them. Thus we are endeavouring to-day to show architects and builders that the installation of modern gas appliances as part and parcel of the normal equipment of the house provides them with a much more saleable article and the purchaser with a sounder investment.

That, in short, is the principal objective of the Gas Industry at the Building Exhibition at Olympia which we review on later pages to-day. We see in many fine displays the fact emphasized that gas appliances constitute an integral part of the household equipment—not merely something to be put in as an afterthought. We see not so much the individual gas apparatus waiting to be pushed in here or there, but rather as part of a composite whole—the gas cooker and refrigerator built in with the kitchen furnishing; the panel fire set in the wall; the tiled fireplace designed to house in appropriate setting the gas or coke fire; the gas water heater as an essential part of the hot water system. That is the story which the excellent series of displays has to tell at this year's Exhibition. And rarely if ever before has standcraft attained so high a level, from which aspect alone Olympia is well worth a visit as an indication that the Gas Industry is in the forefront of modern design.

In addition to the comprehensive and finely conceived display of the Gas Light and Coke Company with its six practical suggestions to builders, mention should be made of two other exhibits which help to set the ball rolling in the present smoke abatement campaign. There is the stand of the London and Counties Coke Association which shows coke as a modern smokeless fuel, supported by the splendid technical service of the Association. Then there is the fine Smoke Abatement Exhibit which tells the story pictorially of the smoke evil and how it can be overcome. Much interest is being taken in this display, a noteworthy feature of which is an ingenious "mirage." This shows brilliant sunshine sweeping over a dull, grimy city and transforming it into a clean, bright area of green trees and shining white buildings. There is much to be learnt from such a display, which we commend to gas undertakings for use in connexion with their individual efforts in support of the smoke abatement campaign.

"By-Products of the Gas Industry"

THIS is the title of the 1938 Summer Number of *West's Gas*, the house organ of West's Gas Improvement Company, Ltd., and it is a publication of the highest order and a welcome addition to the literature concerned with the manner in which the by-products of the Gas Industry enter into the everyday life of the community. The Number is produced in a form which maintains the very high standard set by the editions of previous years, the first of which was published in 1933. At that time we suggested that repetition of the ambitious effort would be no light task if the publication were to be on the same high level. Year by year, however, has seen issues of the Summer Number original in conception, excellent in execution, and of absorbing interest. The 1938 Number, which we have read with the greatest pleasure and no little profit, contains fourteen extremely well-written articles by authorities on their subjects, and there is a happy Introduction by Dr. Stephen Miall, Editor of *Chemistry and Industry*, in which he says: "It appears to me that West's Gas Improvement Company, Ltd., has succeeded in collecting a set of articles that will be a valuable historical record of one side of a great national industry and that these will bring, even to chemists, a fuller realization of the very varied nature of the by-products of the gas-works. There is no reason to think that the progress so amply illustrated by the articles published in this Number will diminish in speed; on the contrary, there is every reason to think that the pace will become more rapid." With these views we are in hearty accord, and we congratulate the Company and the Editor of *West's Gas* on a compilation which we have found fascinating and which we feel sure will prove of value over a wide field.

The first thing which struck us on opening the Number was the fact that coke was not included in the Industry's by-products, and we regard as wise the omission of this one-time "residual" and the implied recognition that it is one of the two main products of the Industry. The first article is by Mr. W. E. Cone, Technical Adviser to the British Road Tar Association, in which he traces the history of road tar and tar road making and concludes that the present position of the road tar industry and its outlet for the future justify confident hopefulness—a measure of satisfaction which, we would add, has largely been brought about by the activities of the B.R.T.A. in collaboration with the Ministry of Transport, highway authorities, and road contractors; there can be no doubt that the important road experiments carried out by the Association during the period of its existence have contributed materially to the marked improvement in tar road construction which is so evident in all parts of the country to-day.

Benzole Recovery

"BENZOLE and its relation to the Gas Industry" is in the capable hands of Messrs. W. H. Hoffert and G. Claxton, of the National Benzole Company, Ltd., who discuss, among other matters, at what point in the process of gas purification the benzole recovery plant should be placed; how, if the calorific value of the gas is to be limited by removing only a portion of the benzole, this should be done; and whether it is more profitable to refine the benzole or to sell it as crude. The answer to the last-named point depends on a number of

factors, the most important of which is the quantity of benzole produced. Extra plant and labour are required and with small productions the overhead costs become exorbitant. The quality of the crude benzole is another important factor, since it governs both the price obtaining for the crude and the costs of refining. The Authors are of opinion that, as a rough estimate, a works producing less than 3 million cu.ft. per day will find it more profitable to sell crude benzole. They show, too, why benzole recovery should commend itself to the gas engineer, but they do not have anything to say on the influence of benzole recovery on the coke market, which is obviously a major consideration. It has been calculated, however, that the Gas Industry could contribute something like a further 20 million gallons of motor benzole—in the interests of the nation's fuel supply and as a source of high explosives in the event of a national emergency—and that profitable recovery does not depend on the size of the works has been amply demonstrated. In this connexion we would call attention to the article by Mr. G. W. Ellis, Managing Director of the Berkhamsted Gas Company, published in the "JOURNAL" of Aug. 31 last, in which he showed a profit of 3·7d. per gallon on benzole recovery on a works with an output of less than 100 million cu.ft. per annum. The cost of labour needed with a recovery plant of the type installed at the Berkhamsted Gas-Works works out at less than a farthing per gallon of benzole produced, and, of course, the advantage is enjoyed of a large reduction in the amount of organic sulphur compounds in the gas.

A Mine of Information

THE scope of the Summer Number of *West's Gas* is very wide, as will be gathered from the following indication of the other articles included. The importance of the Gas Industry in national defence is stressed by Mr. Alec Webster, who describes the manufacture of trinitrotoluene. The use of creosote as a wood preservative, for which millions of gallons are being employed throughout the world, is dealt with by Mr. N. A. Richardson, of the Forest Products Research Laboratory; "Anthracene and Dyes" is the title of an article by Mr. S. W. Dunworth, of Imperial Chemical Industries, Ltd.; the growth of the tar acid refining industry and phenol production—certainly an interesting chapter in the story of tar product development—is discussed by Mr. N. H. Graesser, and the Gas Industry's contribution to public welfare in the form of raw material for disinfectant manufacture by Mr. N. F. Rapps, of Monsanto Chemicals, Ltd. An article on tar derivatives in medicine and surgery is contributed by Dr. F. L. Pyman, of Boots Pure Drug Company, Ltd., and the place of phenol in the development of the modern plastics industry is discussed by Mr. H. V. Potter, Managing Director of Bakelite, Ltd. Other subjects treated are the use of gas products against pests of horticultural crops, by Dr. H. Martin, of the Agricultural and Horticultural Research Station, Bristol; the production of a more refined naphthalene, by Dr. H. G. Shatwell; and by-product ammonia and its derivatives, by Mr. L. S. Mumford, of I.C.I. There is also a contribution dealing with perfumes and flavours. To those who do not know to what extent the by-products of the Gas Industry enter into their everyday life, the mine of information contained within the covers of the Summer Number of *West's Gas* will prove a revelation; to the personnel of the Gas Industry it will reinforce their pride in a great national service, a great chemical industry.

Air Raid Precautions

Gas Engineers who are not already acquainted with the second edition of A.R.P. Memorandum No. C 1, entitled "Air Raid Precautions for Gas Undertakings," recently published by the Air Raid Precautions Department of the Home Office, will find, in this official booklet, information and recommendations dealing with, among other matters, maintenance of supplies, protection of workers, fire precautions, warnings and communications, lighting restrictions and concealment, &c.

Copies, price 6d. each net, are obtainable upon written application to His Majesty's Stationery Office, Shepherdess Walk, London, N. 1, or from the Secretary of The Institution of Gas Engineers, 1, Grosvenor Place, London, S.W. 1.

B.C.G.A. Conference

We are informed, as we go to Press, that the B.C.G.A. have cancelled the Brighton Conference which was to have begun on Saturday, Oct. 1.

Personal

Among those representing the Society of Incorporated Accountants at the Fifth International Congress on Accounting in Berlin last week was Mr. R. WILSON BARTLETT, J.P., a Director of the Severn Valley Gas Corporation, Ltd.

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Falkirk Gas Committee have appointed Mr. WILLIAM A. GALE (Smethwick) to the position of Technical Assistant to the Gas Department.

* * *

Mr. BARKER MITCHELL, Engineer and Manager of Bangor (Co. Down) Gas Department, has applied to the Civil Service Committee for sanction to retire on April 1, 1939, when he will have reached the age of sixty. The Borough Council, however, in view of Mr. Mitchell's valuable services to the Gas Undertaking, have asked him to reconsider his decision.

* * *

Mr. R. BURTON has been appointed Chief Clerk to the Iron Bridge and District Gas Company, Ltd. Mr. Burton entered the employ of the Iron Bridge Company in May, 1936, having previously held the position of Chief Clerk to the Coalville Urban District Council Gas Department.

* * *

The Rochdale Gas Committee has appointed Mr. W. P. SMITH, B.Sc. (Engineering), as Assistant Engineer and Manager in succession to Mr. R. J. BRADSHAW, who has obtained a position with the Bath Gas Company. Mr. Smith, who is a native of Bolton, spent eight years at the Bolton Corporation Gas-Works as a Technical Assistant and for the past five years he has been Engineer and Manager to the Fleetwood Gas Company.

Obituary

The death has taken place at the age of eighty-four of Mr. PETER F. HUSBAND, one of the oldest solicitors in Dundee, who was for nearly twenty years Secretary of the Newport Gaslight Company. He acted as Parliamentary Agent for Mr. Winston Churchill when he contested Dundee in 1917.

* * *

The death took place on Sept. 24 of Sir PHILIP DAWSON, M.P., who last year was President of the Institute of Fuel and whose Presidential Address was discussed in the "JOURNAL" for Oct. 20, 1937. He also read a Paper before the Joint Gas Conference of the British Gas Federation at the B.I.F. last March. He was a keen advocate of a permanent central body to co-ordinate the whole of the power and heating requirements of Great Britain.

News of the Week

A Benzole Plant with a capacity of 200 gallons a day has been installed by Wellingborough Gas Company.

Applications for the Position of Engineer and Manager are invited by the Fleetwood Gas Company in our advertisement columns.

An Alteration of Calorific Value is announced by the Kidsgrove Gaslight Company from 450 to 500 B.Th.U. per cu.ft. on and after Dec. 16.

A Series of Cookery Demonstrations, under the auspices of Edinburgh Corporation Gas Department, will be given by Miss B. Cobb, *Diplomée* N.C.D.S, in the Music Hall, George Street, in the afternoons and evenings until Oct. 7.

A Number of Roman Coins in a good state of preservation and belonging to the era of Antoninus, Roman Emperor from A.D. 138-161, were found by employees of the Dewsbury Gas Department when digging a trench for a gas pipe.

During Consideration of A.R.P. Committee Minutes at a meeting of the Cleethorpes Borough Council, a Councillor suggested that the Cleethorpes Gas Company be requested to camouflage their gasholder as had been done at Sheffield.

Application for a Loan to the Ministry of Health is to be made by the Coalville Urban Council. The sum involved is £17,500, which will be spent on the erection of a new gasholder, purchase of land, and extension of the gas-works at Whitwick.

The Grampian Electricity System Failed Badly on the night of Sept. 22, Montrose, Stonehaven, Fraserburgh, Peterhead, Banff, and many other towns and villages being plunged in darkness for over an hour. The cause of the breakdown has not been stated. In many towns cinema performances were stopped and the patrons were given pass-out checks.

The Tenth Annual Conference of the National Smoke Abatement Society will be held in Cardiff on Sept. 29 and 30 and Oct. 1, under the Presidency of Dr. H. A. Des Vœux. Among the Papers to be presented are one on "Gas in South Wales," by Mr. W. Clark Jackson, of Neath, and one on "Low-Temperature Carbonization in South Wales," by Colonel W. A. Bristow, Chairman of Low Temperature Carbonisation, Ltd.

An Increase in the Price of Gas is announced by the Leamington Priors Gas Company owing to increased costs of coal, other materials, and standing charges. The Company give notice that from and after the readings of the meters for the Michaelmas quarter the price of gas by ordinary meter will be increased from 8½d. per therm (or 3s. 4d. per 1,000 cu.ft.) to 9¼d. per therm (or 3s. 8·4d. per 1,000 cu.ft.) and that the price by prepayment meter will be advanced by the same amount.

To Raise Further Capital the Carmarthen Gas Company give notice of application to the Board of Trade for an Order under Section I. of the Gas Undertakings Act, 1929. The Order authorizes the Company to raise at any time during a period of three years after the date on which it comes into operation share capital not exceeding £10,000 and to modify Section 6 of the Carmarthen Gas Act, 1875, and any other matter relating to the Company, so as to give full effect to the Order.

With the Ritz Theatre, the Birkenhead Gas Department is co-operating in the Theatre's first birthday celebration next week. A birthday cake about 5 ft. in height and standing on a base 4 ft. square, designed to reproduce the chief architectural features of the Ritz, is on view this week at the gas showrooms in Argyle Street. A weight guessing competition has been arranged and the winner will receive a gas fire, which will be installed free. There will be six consolation prizes.

A Revised Scale of Charges is to be introduced by the Mansfield Gas Committee on Oct. 1 for gas supplied for industrial and power purposes. The new scale will be: To consumers of under 50,000 cu.ft. per quarter, 3s. 2d. per 1,000; 50,000 to 250,000 cu.ft. 3s. per 1,000; 250,000 to 1 million cu.ft. at 2s. 10d. per 1,000; 1 million to 2 million cu.ft. at 2s. 8d. per 1,000; 2 million cu.ft. and over 2s. 6d. per 1,000. Further consideration has been given by the appropriate committee to a proposal to build new offices for the Gas and Electricity Departments. It has now been decided to rescind a previous decision to build joint offices in Ratcliffe Gate, and the two committees will next month consider the provision of new offices.

A Recent Issue of 4% redeemable preference stock by the Guildford Gas Light and Coke Company was fully subscribed. The highest price received was £104 per £100 stock, the lowest being *par*.

An Attractive Exhibit was staged by the Colchester Gas Company at the successful Colchester Home and Fashion Exhibition which was held from Sept. 19 to 23 in the Corn Exchange and Moot Hall. Co-operating with the Ascot Gas Water Heaters, Ltd., they displayed a full range of "Ascot" appliances. The Gas Company arranged a rest room, where tea was provided, and the Company's home service demonstrator gave advice on household problems relating especially to cooking, while cookery demonstrations were given hourly. Special exhibition concessions for cash and hire purchase were offered.

A "Baby-Bathing" Competition held in the Gas Pavilion at the Empire Exhibition, Glasgow, last week was attended by a large audience. The competition was divided into three sections, married ladies, single ladies, and gentlemen (married or single). Heats were contested each evening and the finalists competed on Sept. 24, when Mr. Rosslyn Mitchell, Chairman of Ascot Gas Water Heaters, Ltd., presided at the prize-giving ceremony, Mr. David Kirkwood, M.P., handing over an "Ascot" sink heater to the winners of the three sections. Judging points in connexion with the competition were the temperature of the water, handling of the baby, and its subsequent powdering and dressing.

Experiments Are Being Carried Out to make tar pitch suitable for use as fuel according to a report by Mr. H. A. Aitken, General Manager to the Buckhaven and Leven Gas Commissioners. Mr. Aitken reports that the price obtained for tar, under the co-operative marketing scheme adopted among gas undertakings, for the six months ended June 30 was 35s. 1d. per ton, 5s. 11d. less than the price for the corresponding six months of last year. "The reduced price," he stated, "is attributable to the restricted demand and low prices prevailing in general for the refined product and in particular for pitch, so much so that experiments are being conducted with a view to utilizing the pitch for fuel purposes." Mr. Aitken reports that the gross assessment of the Undertaking has been fixed by the assessor at £9,892 as against £10,248 for the preceding year. Spray baths and washing facilities provided for employees by the conversion of the former station meter house cost under £76.

Letter to the Editor

Salaries in the Industry

SIR,—I have read with interest the above article, and would, through the medium of your valuable paper, congratulate Mr. Shaw upon his initiative in connexion with this very vital and important question of salaries. It would afford me considerable pleasure to support the proposition.

In the electrical industry, graduated scales have been formulated and in many instances adopted, owing to the fact that the whole of the electrical industry's professional bodies are unanimous in their claims for approved scales to be paid. It is regrettable that individual application for salaries commensurate with the responsibilities of chief gas officials are without such support, and until our Industry is prepared to submit approved scales for adoption, dissatisfaction will prevail, to the ultimate detriment of the Industry.

With the formation of the British Gas Federation, I cannot agree that the problem is insurmountable.

Yours, &c.,

Gas-Works,
Abertillery, Mon.,
Sept. 26, 1938.

H. MAYCOCK, A.I.Mech.E.,
Engineer and Manager.

Eastern Counties Association

The Autumn Meeting of the Eastern Counties Gas Engineers' and Managers' Association will be held at Gas Industry House on Thursday, Oct. 20, under the Presidency of Mr. W. C. Chapman, of Boston.

In addition to the usual business of the meeting, a Paper will be presented by Mr. W. J. C. Garrard on "Keeping Ahead at Ipswich."

Large Enamelling Furnace

Installed at Main's Gothic Works

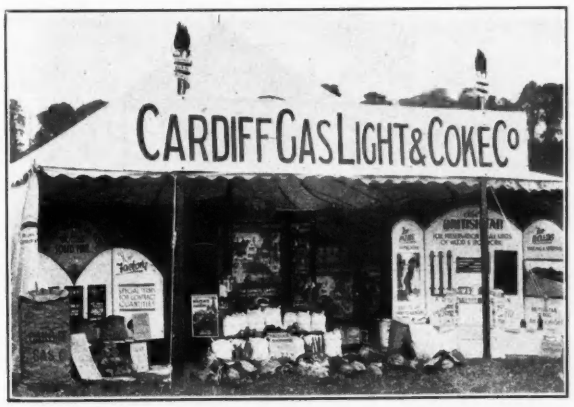
Members of the Industrial Gas Centres Committee visited the works of Messrs R. & A. Main, Falkirk, on Sept. 16, the primary object in view being to see the new gas-fired continuous enamelling furnace which has recently been installed.

This furnace has a production figure of approximately 4,500 lb. of cast iron per hour and 1,600 sq.ft. of sheet iron per hour. In the former case an average of 1·5 cu.ft. of gas is needed to fuse the enamel on 1 lb. of cast iron, and in the latter 4 cu.ft. per sq.ft. of sheet iron; a therm of gas is therefore at least equivalent to a gallon of oil.

This furnace, 140 ft. long, with a firing zone of 40 ft., was designed and erected by the Ferro-Enamelling Company, and is the only one of its type in Europe. It is gas fired by six main burners, capable of supplying 10,000 cu.ft. of gas per hour. The gas is drawn through heat resisting tubes inside the furnace itself, combustion being carried forward through the first 60 ft. of tubing, and afterwards the spent gases pass by means of calorized tubes through the preheat zone of the furnace and are eventually exhausted into the atmosphere at 200° F.

The visit also included a brief tour of the Works, special attention being given to the continuous drying conveyors in the Enamelling Department, also gas fired, and the continuous black dipping and stoving plant which was converted to gas two years ago.

Gas at Agricultural Show



Our illustration shows the marquee used by the Cardiff Gas Light and Coke Company in connexion with displays at local agricultural shows. At these prominence is given to graded cokes, sulphate of ammonia, road tars, and preservative tars, in which commodities the Company do quite extensive business with farmers and large residences. This particular photograph is of the display at the Cowbridge Show in the Vale of Glamorgan.

Once Caught . . .

A dear old lady, when approached by an air raid warden about her gas mask, remarked: "I do not want to have anything to do with those things; they cost too much to run."

When told that they would cost nothing, she replied: "That's what the man who sold me my electric cooker told me."—*Halifax Courier and Guardian.*

Forthcoming Engagements

September.

30.—I.G.E.—Liquor Effluents and Ammonia Committee, 11.15 a.m.; Joint Research Committee, 2.30 p.m.

30.—Wales and Mon. Juniors.—Visit to Austin Motor Company, Birmingham.

October.

6.—I.G.E.—Research Executive Committee, 2.30 p.m.

6.—Midland Juniors.—Presidential Address of A. W. Attwood.

7.—I.G.E.—Joint Committee on Complete Gasification Under Pressure (16, Old Queen Street, S.W. 1), 3 p.m.

7.—North of England Association.—Autumn Meeting at Sunderland.

7.—Southern Association (Eastern District).—Meeting at Gas Industry House, 2.30 p.m. Discussion on A.R.P.

8.—Manchester and District Juniors.—Annual General Meeting at Bolton. Visit to Bolton Gas Works.

8.—Scottish Western Juniors.—Presidential Address of N. C. Sturrock.

10.—I.G.E.—Finance Committee, 1.45 p.m.; Membership Committee, 2.15 p.m.; General Purposes Committee, 3 p.m.; Benevolent Fund Committee of Management, 4.30 p.m.

11.—I.G.E.—Council, 10 a.m.

12.—I.G.E.—Board of Examiners, 2.30 p.m.

13.—Midland Association.—Autumn General Meeting, Grand Hotel, Birmingham.

18.—I.G.E.—Gas Education Executive Committee, 11 a.m.; Gas Education Committee, 2.30 p.m.

20.—Eastern Counties Association.—Autumn Meeting at Gas Industry House, 2 p.m.

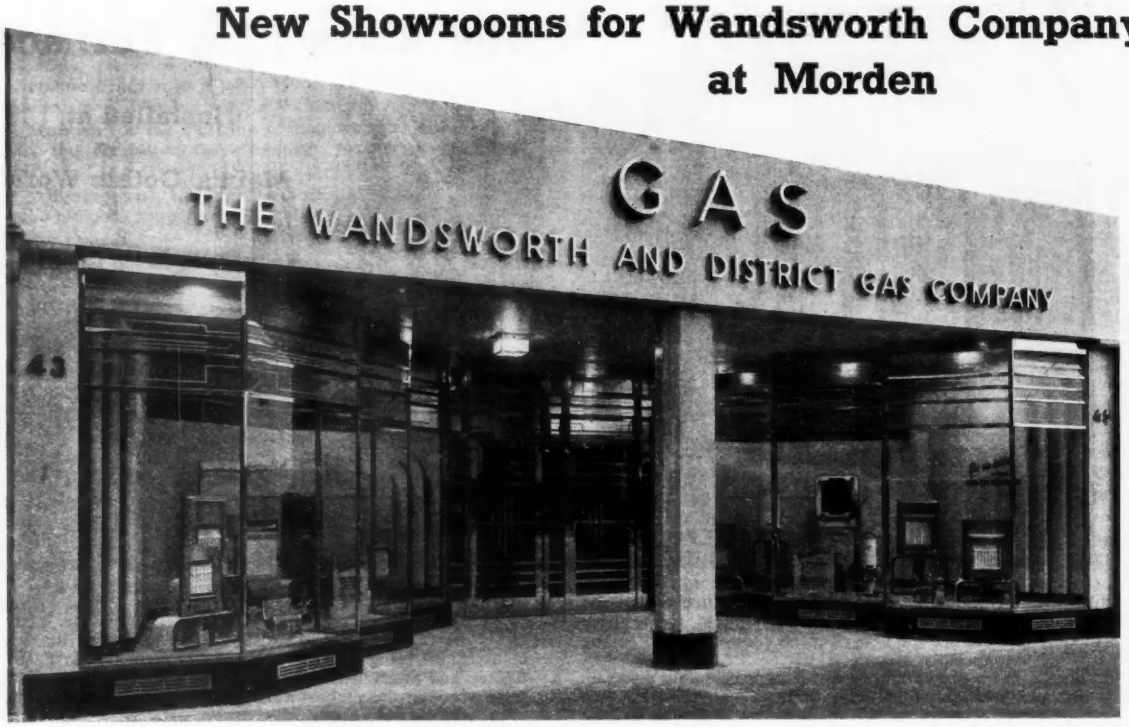
20.—Midland Juniors.—Visit to West's Gas Improvement Company, Ltd., Manchester.

20.—Southern Association (Western District).—Commercial Meeting, Rougemont Hotel, Exeter, 2.30 p.m. Committee Meeting, 12 noon.

22.—Scottish Western Juniors.—Visit to Douglas Firebrick Company, Ltd., Dalry.

27.—Coke Oven Managers' Association.—Annual Dinner, Hotel Victoria, Northumberland Avenue, London.

New Showrooms for Wandsworth Company at Morden



Another showroom has been added to the already large number in the area of the Wandsworth and District Gas Company. New premises have been acquired in the populous district of Morden, and an imposing modern showroom now serves this area.

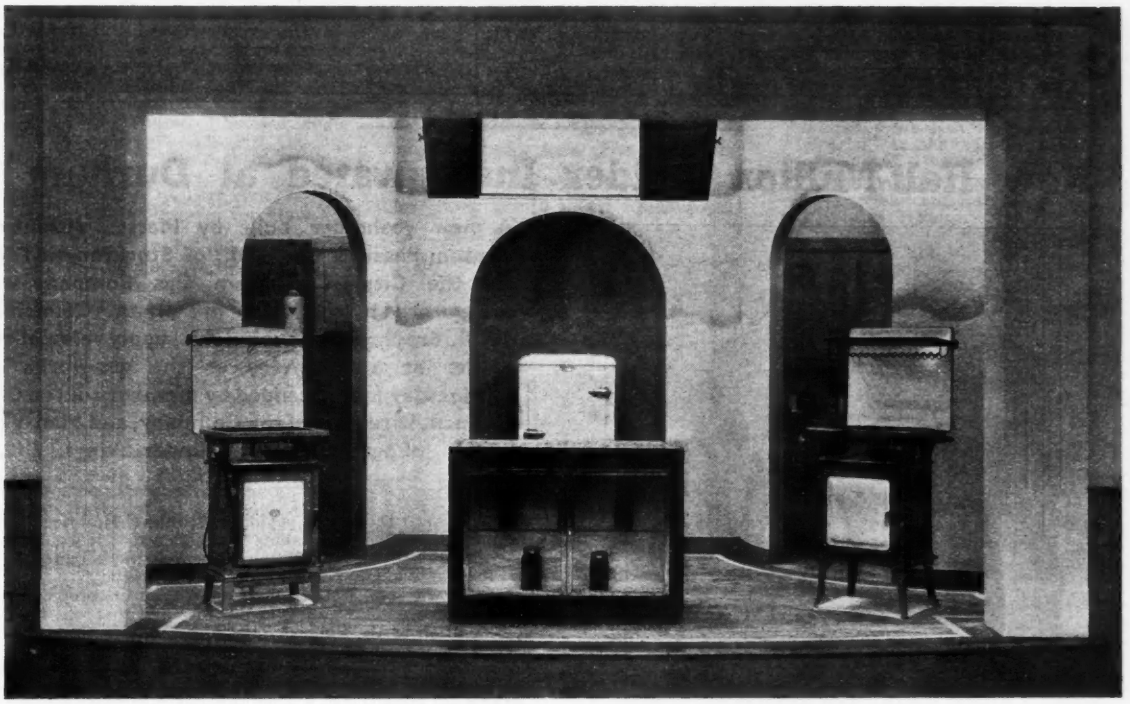
The exterior is of travertine marble with black relief, and this, combined with the bright stainless steel framing of the windows and doors, makes a front which is both dignified and pleasing. The windows which are of the arcade type lend themselves admirably to attractive display, and the treatment which they have received with a specially designed background and the display of apparatus makes a whole which must arrest attention. The exterior lighting is by means of three 10-light lamps, with special reflectors, on columns on the pavement, and four suspended 10-light lamps over the facia.

The interior decorations have been carried out with a white mahogany dado relieved with walnut inset lines and walnut skirting. A novel and effective feature for wall decoration has been

introduced by the use of black glass with peach glass rods in the hotwater section, and also in the cooker sections. The upper walls are a warm cream, and the whole effect is both spacious and quietly tasteful. There are two very pleasing fireplaces in the front of the main showroom. The black glass surrounds combined with blue and peach glass strips make very artistic settings for any gas fire.

live coke fire setting, and on the opposite side to this there is a larger room for reconditioned apparatus, also showing a "Sunsquare" panel fire. These lounges are very important in any showroom, as they enable the salesman to interview consumers in privacy and without interruption.

Leading out from the main showroom is the Demonstration Hall. This has ample seating accommodation and is light and



The Demonstration Platform.

The hot water section shows a range of water heaters which can be demonstrated in actual operation. Cookers are shown in two separate recesses, and this sectionalization of apparatus enables the prospective purchaser to study the particular appliance in which they may be interested in without distraction.

The cash desk in the middle of the showroom makes an imposing centrepiece. It combines the cash desk with a lounge at the rear. At the side there are settings for fires. The lower part is consistent with the mahogany and walnut dado, while the upper part is entirely of peach glass in stainless steel framing.

At the rear of the showroom is another small lounge with a attractive. The platform has been skilfully treated and forms the focal point.

The main lighting of the Showroom and the Demonstration Hall is carried out by specially designed lamps, and with concealed lighting in the overhead lantern lights. There is also a series of very pleasing wall brackets. The water heating and cooker recesses are also illuminated by concealed lights.

The Wandsworth and District Gas Company have every reason to be proud of their latest effort; this new showroom is a credit to this progressive Company.

A Hundred Years of Service

Middlesbrough Celebrate Centenary

The Mayoress of Middlesbrough, Mrs. W. Turford, who was accompanied by the Mayor, opened an Exhibition in the Town Hall on Sept. 21 to mark the centenary of the Middlesbrough Gas Undertaking. Having referred to the labour-saving qualities of gas the Mayoress concluded by saying that in Middlesbrough they were very proud to be associated with the production of such cheap gas, and, even if the price did go up, it would even then be very cheap indeed.

In the unavoidable absence of Alderman S. A. Sadler, Chairman of the Gas Committee, Councillor T. K. Briggs presided. He traced the origin and development of the Gas Industry in Middlesbrough, and said the present very low price of gas might have to be increased owing to the closing down of the coke-oven plant at Messrs. Dorman Long and Co.'s Newport Ironworks. Praising the Exhibition, Councillor Briggs said it was a wonderful demonstration of progress. "We have been progressing every year for a hundred years and I think it is a great credit to us," he concluded.

A vote of thanks to the Mayor and Mayoress was proposed by Mr. J. W. Pallister, Engineer and Manager, who said the object of the exhibition was to bring to notice not only the past but the present. "Although we are a hundred years old we have a modern outlook," he added. "It is very apparent that the Gas Undertaking has not stood still during these hundred years, but has made remarkable progress." The Mayoress was presented with a bouquet, and the Mayor with a suitably inscribed pocket-book.

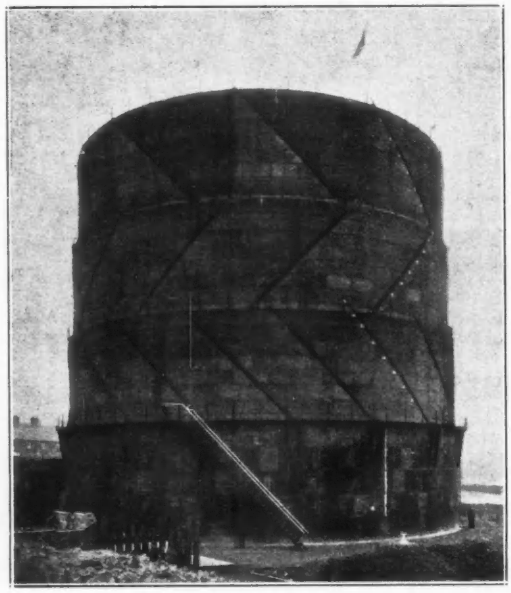
The exhibition recalls the story of the Gas Industry in Middlesbrough—a story of continued development. There is a house in West Street to-day bearing the inscription "Erected by Mr. George Chapman, April, 1830, being the first house in the new town of Middlesbrough-upon-Tees." It was only eight years later that the little new-born town was supplied with gas by a private company. The population then numbered less than 4,000; to-day it is about 144,000. Eighteen years later, in 1856, the Town Council acquired the Gas Undertaking from the Owners of the Middlesbrough Estate for the sum of £18,201. To-day there is a capitalized total of £917,000 on the Works, and as much as £714,000 of the loan money has been repaid. Middlesbrough has received in rate aid from the Gas Undertaking no less than £185,000, and at the same time the capital outstanding on the works has been reduced to only £203,000, a very low figure for such a valuable asset to the town. A close study of the Gas Industry in the town from the time of the establishment of the Gas-Works in Lower Commercial Street by the Middlesbrough Owners in 1838 up to the year 1856, when the Corporation purchased the Gas-Works, and so on to the present day, would reveal that the general rate

of progress throughout the country has certainly been maintained in Middlesbrough.

To meet growing demands for gas the Corporation have constantly had to keep extending and modernizing the plant, and it was on this score that a large holder (No. 6) was built in 1926, and on Nov. 5, 1937, that the new No. 7 gasholder came into being. Last year the Undertaking sent out 1,300 million cu.ft., a record in its long history, and demand for gas is still increasing. Over 36,000 gas cookers are in use in the town, 12,000 gas fires, and 16,000 gas wash boilers. Middlesbrough's trades and industries find that gas-fired plant, with its accurate and automatic temperature control, is the best fuel for scientific methods of manufacture. Financial results have been just as encouraging. The total expenditure on revenue account during the year ended March 31, 1938, has been £119,466, against £108,604, the previous year, and the income was £160,488, against £152,376. This gave a gross profit of £41,022 against £43,772 during 1936-37.

During the exhibition there were numerous lectures and demonstrations every afternoon and evening on cooking, easy home laundry, hot water, and kitchen planning, together with cinema shows in the Crypt, which proved of undoubted interest to all consumers of gas on Tees-side. Of particular interest to all housewives was the series of talks illustrated by lantern slides, by an expert from the Kitchen Planning Centre, London, on "How to Plan Your Kitchen." This expert was available to visitors and gave free advice on kitchen problems, and was in great demand by those about to set up a new home. There was a model kitchen on view, designed and planned on the most modern lines.

New Half-Million Holder Inaugurated at Durham



A new gasholder built by Messrs. Ashmore, Benson, Pease & Co., Ltd., of Stockton-on-Tees, for the City of Durham Gas Company was inaugurated by the Mayor of Durham (Councillor W. E. Bradley) by opening the supply valve of the holder at a ceremony at the gas-works on Wednesday last, attended by members of the City Council, Directors of the Company, and Managers of neighbouring gas undertakings.

The gasholder is the Company's fourth, and, with a capacity of 500,000 cu.ft., provides for the future expansion in the use of gas in the Company's area stretching a radius of about eight miles, and relieves the Directors of the anxiety which had been felt in recent months as to the adequacy of the works storage capacity.

Work on the gasholder, which is of the spiral guided type, was commenced in February and the holder was completed in August. Its total height is 90 ft. 6in., it has three lifts, and the tank, containing 5,500 tons of water, is 24 ft. deep. The lifts are 23 ft. 6 in. deep and the diameter of the holder 102 ft. It has 18 in. inlet and outlet pipes and is built on re-inforced concrete, the Franki system of piling being adopted.

Guests were welcomed by the Chairman of the Company, Alderman T. W. Holiday and the Engineer and Manager, Mr. R. W. Nicholls, and the ceremony was preceded by a brief tour of the works.

At a brief ceremony at the gasholder, Alderman Holiday presided and the Mayor then proceeded to inaugurate the new supply. Later the party proceeded to Durham Town Hall for tea. Alderman Holiday welcomed those present and said there was one important factor about gas in such a city as Durham as compared with other forms of heating and lighting and that was that the works were a purely local undertaking, employing local workmen, supplying local needs, and paying local rates. He briefly outlined the progress of the undertaking and added that it would be seen that the Directors were fully alive to what was required of them and they were doing their best to please everybody.

The Mayor congratulated the Company on its progress. There was need for better lighting in the City and that was now under consideration by the Council. He hoped the Gas Company would participate in any developments in public lighting that might be undertaken. The provision of a good gas supply was imperative in a city such as theirs where there was talk of bringing light industries. During his year of office he had had enquiries from firms in various parts of the country and he had always stressed that the services provided in Durham were very much alive.

On behalf of Messrs. Ashmore, Benson, Pease & Co., Mr. B. Peat presented Alderman Holiday with an inscribed silver salver, and Mr. Nicholls with a silver cigarette case. Mr. H. C. Ferens, a Director, moved a vote of thanks to the Mayor and said that some months ago they had been anxious as to their storage capacity and the new holder would see that the future supply of gas was adequately maintained. There was competition between methods of heating and lighting, and he thought that was a good thing for the area. The question of lighting might be open to argument but he thought gas unrivalled for cooking and heating.

Progress of the Company since 1899 is reflected in the following comparative figures.

Last year the undertaking carbonized 11,831 tons of coal, for which £10,296 was paid, and 4,075 tons of coke and 559 tons of tar were sold. The share capital exceeds £100,000 and the length of mains is 49 miles. Wages and salaries accounted for £11,511.

In 1899 the Company supplied 39 public gas lamps. By 1914 the number had risen to 160, and last year to 613. Rent, rates and taxes which in 1899 were £531 had risen to £1,047 in 1914 and last year to £4,049. The number of consumers had increased relatively from 2,862 to 5,432 and to 6,746 last year. Gas sold respectively was 86,816,000 cu.ft., 114,159,000, and 137,281,000. The make of gas last year was 159,810,000 cu.ft. The number of cookers had risen from 182 in 1899 to 1,466 and last year to 3,540, while the rise in the number of gas fires were greater still at 59 in 1899 to 438 and 2,956 last year.

A Repeat Order

The organizers of the Hair and Beauty Fair at Olympia indicated the reliance which is placed in gas by once again inviting Thomas Potterton (Heating Engineers), Ltd., to provide the heating installation which supplies hot water for the various competitions.

Opportunity was taken by the firm to install a "working exhibit"—whereby not only was a plentiful and constant supply of hot water available, but the neat, efficient, and pleasing apparatus which provided it was open for all to inspect. The installation comprised an "Empire" lagged set of 75 gallons storage capacity, which was fully able to cope with the demand.

Amalgamation and Grouping

Chichester and Bognor.

A provisional agreement for the amalgamation of the Chichester Gas Company and the Bognor Gas and Electricity Company is to be presented to the shareholders of both Companies.

How the Gas Industry Can Help the Builder

Fine Displays at Building Exhibition

The Building Exhibition — the twenty-first of the series organized biennially — which is being held at Olympia, once again shows how the Gas Industry can co-operate with the building trade in an up-to-date and practical manner.

In the many fine displays by Gas Industry firms at the Building Exhibition we see the fact emphasized that gas appliances constitute an integral part of the household equipment—and not merely something to be put in as an afterthought. Some splendid examples of standcraft show the Gas Industry to be in the forefront of modern design, and in the following pages we review the exhibits which are of more direct interest to the Industry in so far as it can assist the architect and builder.

Ventilators and flue terminals are exhibited by the **Aerolete Ventilating Company,** who are also demonstrating examples of their patent asbestos cement roof ventilators and gas flue terminals in all sizes. The firm are specialists in down-draught prevention.

Very human and alive is the design of the **Ascot Gas Water Heaters, Ltd.,** stand. Economic and reasonable provision of space, graceful and clear system of construction, orderliness and soundness, all combined to produce the ultimately required effect of displaying to their best advantage the uses of "Ascot" heaters. Mr. Rodney Thomas, A.R.I.B.A., the Architect, succeeded in getting together a group of people, each one expert in his own subject of display, advertising, and psychology, who co-operated with him in producing a very striking layout.

The display occupies two stands, which, though separated by a public gangway, are linked together by interlacing their respective roofs, giving the impression of unity. By raising the floor and lowering the ceiling of that part of the stand occupied by the Tea Terrace, a psychological impression of intimacy has been achieved. Borders of flowers surround it and metal wires extend from floor to ceiling providing the suggestion of enclosed space without detracting from the feeling of spaciousness. A portion of this is devoted to the Architects' Service Department, which has been created for the purpose of providing technical information on all problems relating to gas water heating for domestic purposes. On the other part of the stand an array of working models of sink heaters pour continuous streams of hot water into a trough. Reproduced direct on to the ceiling is a large scale photograph of one of the processes used in the manufacture of "Ascot" heaters and a special display has been arranged of a glass model of the NEA.32, supported by illustrations of the various sections of the appliance.

The pleasant colour scheme, concealed lighting, strict proportion in general massing and the lively treatment of detail, all go to produce a constructive and rational background for displaying of an appliance which has reached an æsthetic standard of appearance justified by its technical achievement.

"Bar-Spot" gas-heated washing machines are shown by **Barker & Turner, Ltd.** These machines, which may be used for any boiling purpose, are of cabinet form, cannot tear the clothes, and incorporate a folding power wringer.

In addition to their "Nevastane" sink and drainer units and other kitchen accessories, **Benham & Sons, Ltd.,** are demonstrating the "Panelite" system of hot water pipes located in walls, floors, or ceilings. These coils have special composition covers to allow for free movement due to temperature changes. Damage to structure or system as a result of expansion or contraction is therefore impossible.

Many interesting forms of constructional material are shown by **Cellactite and British Uralite, Ltd.** Among those of interest to the Gas Industry may be mentioned asbestos protected metal in the form of roofing and roof ventilators. Incorrosible pipes and fittings as used by gas undertakings and makers of heating appliances throughout the world are prominently featured, together with examples of the same material used for fume-ducting, air-conditioning plants, &c. Asbestos cement in the form of flat and corrugated sheets and various sundries are also displayed.

Prominence is being given on the stand of **Clarkhills, Ltd.,** to their "Minor de Luxe" multi-point gas water heater. With white porcelain enamelled body and chromium-plated top and base, this heater has an output of 3 gallons per minute raised 40° F. with a gas consumption stated to be 3 cu.ft. per minute at 500 B.Th.U. The heater is particularly suitable for the small house, flat, or bungalow, and will supply sink, lavatory basin, and bath on as low a head of water as 5 ft. Other of the firm's multi-point heaters are shown on this stand, and also their "Speedex" heater which is fitted into the flow and return of the boiler system. It can be used independently to heat the storage tank or as a booster to the solid fuel boiler when a quick supply of hot water is required. The maximum gas consumption is stated at 50 cu.ft. per hour.

Metal-to-metal jointing cements and sheetings are shown by **Clough (Croydon), Ltd.,** including white jointing paste for heating engineers. Among the other exhibits of this firm are their tinning compound, belt preservative, in liquid, paste, and solid bars, wire rope lubricant, metallic packing, paints, and asbestos cements.

The exhibit of **Durasteel Roofs, Ltd.,** is constructed to illustrate various applications of corrugated roofing sheets and fire protection panelling. These materials are both patent combinations of steel and asbestos in sheet form. Also shown are A.R.P. splinter proof shutters of light construction and embodying fire-proof panels and impact absorbing sheets. These shutters are shown fixed to a window in a section of typical wall in a manner already adopted for A.R.P. schemes in London buildings.

Coke grates fitted with gas ignition are shown by the **Eagle Range and Grate Company, Ltd.** (Radiation Ltd.), including an attractive barless model. Independent gas-coke grates, requiring no building in, are available in various models, with or without "blowers" for rapid lighting and also capable of heating boilers for domestic hot water supply. Some of the "Eagle" combination grates are shown in operation, among them being a coke-burning low-oven model. A gas-heated "Regulo" controlled oven and two gas boiling burners in a separate chamber, in addition to the cooking and water heating facilities provided by an open coke fire, are features of the "Bijou" gas and coke combination grate.

Multi-point and single-point gas water heaters of modern design are displayed by **Ewart & Son, Ltd.,** special prominence being given to their new "Empire" multi-point model. This heater has a capacity of 3½ gallons per minute, and includes baffler, thermostatic pilot control valve, gas governor, automatic lighter, and hand adjustable temperature control. A particular feature is accessibility for cleaning and adjustment. The outer casing of the unit can be easily removed and replaced without displacing the vent pipe or removing the baffler. Other types of gas water heater, including the "Advance," are demonstrated on this stand.

The exhibit of the **Expanded Metal Company, Ltd.,** consists of specimens of "Expamet" expanded metal products which are applied to innumerable purposes. The larger meshed expanded steel is used chiefly as reinforcement for all forms of concrete and fire resistant construction, while the smaller meshes find application in many other ways, such as partitions, shop-divisions, fencing, flooring, guards for machinery, windows, trees, &c., baskets, lockers, ventilators, and so forth. Expanded metal lathing, also shown, can be used for practically any type of plaster construction, affording a level and rigid meshwork surface to which plaster can be applied quickly and easily. Various other of the firm's products are also shown on this stand.

An Old-Established Firm.

The experience of over 160 years of stove making is reflected in the stand of **Sidney Flavel & Co., Ltd.,** whose displays of complete fireplaces for both gas and coke fires, with attractive tiled surrounds, are a pleasing feature of the exhibit. The firm are now making a strong point of these tiled surrounds, and many very pleasing designs are available. In addition to their well-known "Metro" coke grates and gas "log" fires, examples of their gas fires are shown, both panel and independent models. With their curved radiants and automatic ignition, these are efficient and attractive appliances in a variety of different finishes. Also on the heating side are a range of gas radiators in coloured finishes, including the new "Vek" No. 2 heater which has been specially developed for the purpose of providing warmed air to add to the comfort of rooms normally heated from a single fireplace. Such a fire often leaves the more remote portions of the room too cold for comfort in winter—a condition which this heater corrects. It is normally set low down on the wall—just above the skirting board and provides a background of warm air while being neat and unobtrusive in appearance. Flavels range of cookers are also shown on the stand, pride of place being given, of course, to their "Kitchen Grand"—a "streamlined" cooker constructed throughout in pressed steel. One simple movement opens the cover which automatically sets the plate-rack in position. The hotplate has three boiling burners and a high-speed griller with rustless fret. Oven heat control is

provided. The hotplate extends farther back than the oven, thus leaving a free space behind the cooker for cleaning. Other well-known cookers are shown in pleasing mottled enamel and coloured finishes, while the "Elf" and "Elf Major" provide excellent examples of appliances for the smaller household, both models providing plate-warming chambers on either side of the oven. This stand is an excellent example of attractive layout, centring round the basket coke fire in operation at the back.

Practical Suggestions to Builders.

The stand of the **Gas Light and Coke Company** is arranged to give six practical suggestions to builders which will assist them in selling their houses—cooking, gas fires, water heating, coke fires, central heating, and refrigeration. The whole conception and design transcends anything we have hitherto seen in this direction and provides a worthy focal point to the gas section. Full use is made of coloured pictorial backgrounds and realistic tableaux with effective use of concealed lighting and illuminated panels to emphasize the arguments, while slogans and captions are carried out in solid block letters instead of merely painting them on the walls. Particular emphasis is laid upon the results of Kensal House, proving beyond all doubt that the all-gas and coke dwelling is considerably cheaper than any alternative combination of services. Photographs of Kensal House show the pleasant surroundings and are supported by uncontrovertible evidence in the shape of household expenditure figures—6s. 5d. per week for light and fuel for the ordinary dwelling as against 4s. 4d. at Kensal House—this story again being told pictorially. The six practical suggestions are all featured in separate sections with appropriate illustrations, while surmounting the whole is Mr. Therm mounted on a ladder and offering his "Tips to Builders." A special point is made of the Company's offer of free gas fires to builders who carcass their new houses for gas, while an example is shown sectionally of how the gas refrigerator can be conveniently built into the kitchen fitments, thereby saving valuable space. Emphasis is, of course, also laid on the two-part tariff as an economical proposition when extending the use of gas. Altogether the Company are to be congratulated on a very noteworthy exhibit.

A number of materials of interest to the Gas Industry are shown by **Grant & West, Ltd.,** including metal-to-metal jointing compounds, belt treatments, wire rope preservatives, and waterproofing compounds. Plastic metallic packing and many other articles are also displayed, of particular interest to fitting departments being portable pipe vice holders.

In addition to their steel double-cased office partitioning packed with sound insulating material **G. A. Harvey & Co. (London), Ltd.,** are showing a variety of their other products, such as copper roofing, tanks, cisterns, and cylinders, coal bunkers, mild steel and copper ventilators, cast air-bricks, perforated radiator covers, pipe guards, steel filing cabinets, desks, and shelving, and gilled tubes for heating and cooling apparatus—many of which find useful application in the Gas Industry.

On the stand of **Hilmor, Ltd.,** is a comprehensive range of bench and portable tube bending machines of interest to all engaged in plumbing and gasfitting work. The most modern methods of bending by the use of such of these tools as we have on previous occasions described in these columns are being demonstrated daily at the Exhibition, including the portable conduit bender, a feature of which is its ability to produce the short radius sets required for shallow pot floors. In addition, the latest production of the firm is on show for the first time—an entirely British portable hydraulic bender for gas and steam barrel, completing a range of appliances which have been designed and developed specifically to meet the needs of the Gas Industry and allied trades.

The roof of the stand of **Horseley Bridge and Thomas Piggott, Ltd.,** provides an interesting example of "Lamella" construction, the main feature of which is the building of an arched roof or complete semi-cylindrical structure by the assembly of standard pressed steel units in a series of diamond forms. On this framework any type of roof covering may be used, and a small section of the roof of the stand has been covered with corrugated asbestos sheets and R.P.M. supplied by Turners Asbestos Cement Company. The corners of the stand are built up from standard plates such as are used in the construction of Piggott pressed steel tanks for the storage of all liquids. A scale model is shown of one of these tanks having a capacity of 30,000 gallons, elevated on a steel tower 60 ft. high. Other exhibits comprise a range of photographs illustrative of the principal activities of the firm, including structural steelwork for industrial buildings, bridges, piers, "Lamella" roofs, and water softening and purification plants.

Working examples of their gas water heaters are demonstrated by the **Hurry Water Heating Company,** including automatic thermostatically controlled heaters for circulatory systems for alternative use with solid-fuel boilers, or as independent units. Various other types of gas water heaters are shown, together with domestic wash boilers which combine the two services of clothes-washing and providing hot baths in the one appliance.

A wide range of "Ideal" boilers for central heating and hot water supply, together with various accessories, is exhibited by **Ideal Boilers and Radiators, Ltd.,** also examples of their radiators, "Rayrads," and towel rails. Displayed for the first time is their No. 1-XL domestic boiler for hot water supply, which is of new and interesting design. To cover the growing demand for central heating in the smaller house, examples of suitable radiators and gas boilers are shown. In contrast is the No. 6R sectional boiler, which is the largest cast-iron sectional boiler made. Demonstrations are being given of the "Ideal" full-way wrought copper fittings.

The display of the **Lead Industries Development Council** demonstrates the various uses and advantages of lead sheet and pipe work in modern building practice, and of red lead and white lead paints in protective and decorative painting. Practical demonstrations in plumbing, lead burning, and painting are being given on the stand by skilled craftsmen, and a technical staff are in attendance to deal with any enquiries on matters concerning these materials. Two small cinema projectors continuously show films of paint application and practical plumbing and leadwork. A large photographic display illustrates the manufacture of red lead, white lead, sheet lead, and lead pipe, as well as their applications. This display is in effect a survey of the major uses of lead and lead products in building and industry, and typical examples of leadwork are on view.

Convincing Coke Display.

"New King Coke" makes his first official bow to the public on the stand of the **London and Counties Coke Association,** where his industrial and domestic applications are ably demonstrated. Emphasis is laid upon the labour-saving aspect of coke usage, full supporting literature being available on the stand. The exhibit is designed on very pleasing lines—a modernistic note being struck by the layout and effective lighting. As a centrepiece is one of the latest coke grates in operation, while other grates and domestic boilers are grouped around. A new development is the "Halco" boiler, which is of the magazine type, having a hopper capacity sufficient for about a day's operation without re-charging. This and a larger gravity-feed boiler is manufactured by Hall Boilers, Ltd., and includes a number of interesting features, including automatic damper control and temperature regulation, foot-operated shaker, and glass inspection door. At one end of the stand is a panel setting out the many technical services which the L.C.C.A. offer freely to all coke users, while opposite are examples of the various automatic devices which are now applicable to coke boilers, such as heat motors, motorized valves, room thermostats, and other devices. This stand provides another useful information bureau for builders—just as the Association serves the Gas Industry in a similar capacity.

Porcelain enamelled equipment for bathroom and kitchen is being displayed by **National Enamels, Ltd.,** including bath panels, pantry shelves, splash plates, tiling, draining trays, and utility cabinets.

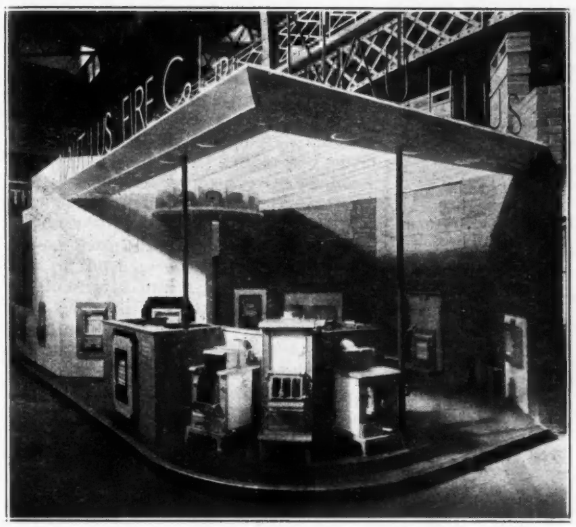
Gas water heaters to meet every demand of the household, as well as for larger scale supplies, are shown by the **National Gas Water Heater Company, Ltd.** The two points which strike one first about National heaters are the excellent flow of really hot water and remarkably simple manner in which the outer casing can be lifted off for easy cleaning and maintenance. Now that the majority of water heaters on the market have reached a very high state of efficiency in operation this is a most important feature. The firm's single-point bath heater, in white enamel finish, is equipped with volume gas governor, safety pilot, and automatic water valve. There is only one gas tap, which can be used either for right or left hand fixing. The component parts when removed from the jacket comprise just two aluminium heat exchangers—easy to keep clean and inexpensive for replacement if ever necessary. The output is stated to be 3 gallons per minute raised 40° F., the consumption being 90,000 B.Th.U. per hour. The National multi-point heater is supplied in two sizes—one similar in output to the single-point model and the other of 4 gallons per minute output and rated at 120,000 B.Th.U. per hour. This heater can be adapted to existing hot water installations and is simple and fool-proof in operation. The firm are also showing a smaller sink heater fitted with dual taps—hot and cold—manipulation of the two producing any required temperature. An automatic valve is incorporated. The display also includes larger thermal storage sets, including the Ruud-National multi-coil heater, a special feature of which is the secondary control which provides against the water becoming heated in excess of any predetermined setting.

Smoke Abatement Exhibit.

In conjunction with the Gas Light and Coke Company, the **National Smoke Abatement Society** have staged a very fine display dealing with the damage caused by smoke. The exhibit is divided into three sections. The first is devoted to the effects of smoke nationally on buildings, &c., and its cause. In the second section the effects of smoke on the health of the community are portrayed, while in the third the cause, nature, quantity, and

chemical action of smoke are illustrated. The displays are supported by a remarkable selection of illustrations depicting in a convincing manner the ravages of smoke on human beings and on buildings. A very effective "mirage" picture is shown in which a dull, grimy slum district gives place, as the sun comes out, to a delightful clean smokeless area with green trees and bright buildings. Coming at a time when the Gas Industry is launching its great campaign against smoke, this exhibit provides very strong propaganda and is attracting a good deal of interest at the Exhibition. Displays of this nature might well be considered by individual gas undertakings in support of the campaign.

The interests of the Gas Industry are well-represented on the **Nautilus Fire Company's** stand by two outstanding products in new and improved form. The improved Nautilus economy gas flue system makes its first appearance. The "Panella" series of gas fires is shown in new designs of special appeal to builders. Of the new features that now distinguish the Nautilus system, that of chief interest to the Gas Industry is the spigot and socket joint between the blocks. In the past it has been possible for the efficiency of a gas flue to be seriously impaired by the projection of mortar fangs, left by careless workmanship in building up, into the flueway. In addition, the blocks are self-setting for position, so that trueness in the construction of the flueway is ensured. The flue area has also been increased from 12 in. by 2 in. to 12 in. by 2½ in.



The Display of the Nautilus Fire Company, Ltd.

The adaptability of Nautilus flues, always one of their great merits, is still further increased by the addition of new blocks to overcome the special difficulties met with in modern building. Nautilus flues can be used without difficulty in present day steel-framed buildings.

Many types of "High Beam" self-lighting gas fires and of the "Panella" fire are shown on the stand.

The two new designs—the Panella "K" and the Panella "L"—comprise fire and plaque in one unit that fixes directly to the brickwork by means of lugs afterwards concealed by the plaster. In the Panella "K" the colour finish has been considered as an integral part of the design; while the Panella "L" meets the demand for an inexpensive fire of landscape proportions.

Though either type can, of course, be fitted to the ordinary 9 in. by 9 in. brick chimney, each is specially adapted for use with the Nautilus flue system. No part of the fire restricts the flueway or interferes with the free passage of the products of combustion.

Attractive colour finishes for water heaters are a feature of the display of **New Geysers (1931), Ltd.** Shown in a typical bathroom setting is their latest heater in a pleasing shade of blue to match the bath, while the "Villa" circulator shows how gas can be used in conjunction with or instead of the solid-fuel boiler system. The "Storeen" sink water heater of 2½ gallons storage capacity is demonstrated, together with the latest "Autofont" multi-point appliance. The firm are also exhibiting a neat little wash-boiler with luminous burner.

A Comprehensive Stand.

A full range of gas appliances for all domestic purposes is to be seen on the stand of the **Parkinson Stove Company, Ltd.** A model kitchen setting shows a built-in refrigerator, while above the draining board is the firm's gas circulator. This is an extremely neat little heater in white porcelain enamel with chromium fittings. It is provided with automatic temperature control, pilot-operated safety device, and ready access to water-ways for cleaning. The gas consumption is stated to be 30 cu.ft. per hour (500 B.Th.U. gas), with a capacity of 10 gallons per hour raised 100° F. The height is 18 in. and the size of body 7 in. by 5 in., with a width over unions of 14 in.—which will give a good idea of its compactness. On the heating side the new "Zonette" heater may be mentioned. This is a very attractive portable heater of the "bar" type, having a larger counterpart in the "Solray" heater for halls and passages. "Renown" and "Crown" cookers are, of course, prominently featured, as well as many of the firm's well-known ranges of gas fires and water heaters.

A number of appliances of interest to gas undertakings are shown on the stand of **Pegson, Ltd.,** including Pegson rippers, portable pumps, and breakers.

Gas central heating and hot water supply for domestic and industrial purposes is the subject of the display of **Thomas Potterton (Heating Engineers), Ltd.,** and, as usual, there are examples of a full range of apparatus for all requirements. The improved totally-enclosed "Emperor" thermal storage sets are shown in four standard sizes, the maximum consumption of which is 80 cu.ft. per hour, with a cut-down to 2 cu.ft. One of these installations, as suitable for a flat or private house, can be seen in operation, being connected up to a towel rail and to a draw-off tap over a stainless steel sink. These sets, encased in attractive white enamel cabinets, are supplied with storage up to 40 gallons. A "Rex" lagged storage set with "D" series boiler for direct hot water supply is shown in conjunction with a gas pressure operated night valve for automatic control of the secondary circuit. Other lagged storage sets are demonstrated with twin boilers, while larger "Rex" boilers in enamelled finish are shown for big central heating jobs. The firm's "Spiral" greenhouse heater is an interesting little appliance for the amateur horticulturist.

Demonstrated for the first time on the stand of the **Rawlplug Company, Ltd.,** is their new screw anchor. This new device is designed for fixing work in damp or exposed positions. Throughout the exhibition demonstrations are being given of various Rawlplug devices which are of considerable interest to the gasfitter. Indeed, one of Flavel's "Elf" gas cookers is actually shown fitted to a wall with Rawlplugs. A special testing machine proves the holding power of these fixing devices.

Belt treatment for all types of belts and ropes to enable them to be run slack under full load is an exhibit on the stand of **Thomas & Bishop, Ltd.,** who are also showing examples of their metal-to-metal jointing material in powder form for screw, flange, and tank work joints. In addition, they are exhibiting their tinning compounds, refractory cements, lubricating grease and lubricators, solders, and roofing compounds in various colours.

The striking originality of the stand of **Turners' Asbestos Cement Company** (Branch of Turner & Newall, Ltd.) is accentuated by its size. The well-known T.A.C. monogram serves as a background for a comprehensive display of asbestos-cement materials. There are roofings of every description suitable for all classes of buildings and asbestos-cement sheets for interior decoration. A special section has been devoted to the application of asbestos-cement materials to A.R.P. buildings. "Everite" asbestos-cement rainwater goods, soil pipes and fittings, ventilators, ducting, cable conduits, pressure pipes for gas and water—all are shown, in many cases side by side with photographs of actual installations.

City and Guilds of London Institute

S.B.G.I. Awards

The Council of the Society of British Gas Industries has again this year awarded prizes in connexion with the examinations of the City and Guilds of London Institute in Gas Supply Practice and Gas Fitting. The examiners report that no candidate reached prize standard in the Minor Course in Gas-Works Practice.

The list of the awards is given below:

MINOR COURSE IN GAS SUPPLY PRACTICE.

First Prize of £5 5s.—Leonard Spriggs, a Student of the East Ham Technical College.

Second Prize of £2 2s., to be divided equally (£1 1s. each) between the following two candidates.—Norman Heap, a Student of Burnley Municipal College; Arthur Ward, an External Candidate at the Skipton Centre.

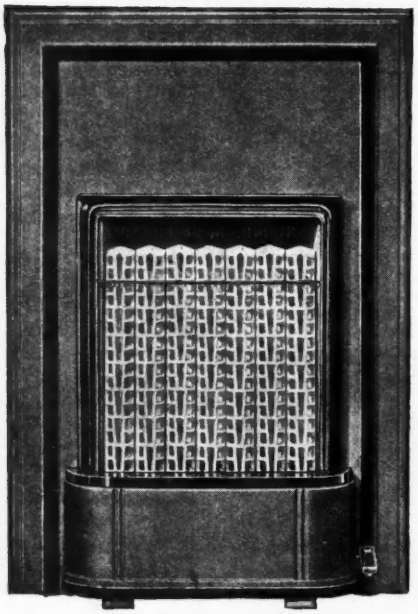
FINAL EXAMINATION IN GAS FITTING.

First Prize of £5 5s.—George Charles Johnson, a Student of the East Ham Technical College

Second Prize of £2 2s.—Thomas Robson, an External Candidate at the Newcastle Centre—Rutherford Technical College.

"Designs of simple and refined appearance"

No. 1427
FIRE KING



Literature obtainable on request.

MAIN

Fire King

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Radiant efficiency; hygienic efficiency; and mechanical and maintenance details have been perfected to the highest degree in the Fire King series, which consist of square and round top designs of great dignity. A simple and effective Self-Lighter of improved pattern is incorporated.

Each Fire in the series will harmonise with any modern interior, owing to the wide range of finishes available.

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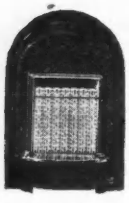

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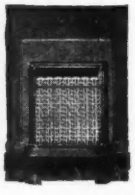

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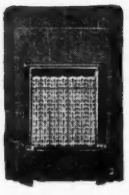
No. 1457 FIRE PRINCE



No. 1557 FIRE PRINCESS

The Development of a Small Undertaking

by

A. D. HOWELLS,

Engineer and Manager of the Abergavenny Corporation Gas Department.

A Paper presented to the Wales and Monmouthshire Association of Gas Engineers and Managers at their Meeting at Porthcawl on Sept. 15.

I was invited, at rather short notice and in the middle of the holiday period, to prepare a Paper for this meeting.

In these days of expansion of areas of supply with a resultant increase in output it is, I think, unusual to find an area such as the residential town of Abergavenny where the population has been declining for some years, yet accompanied by a large increase in the output of gas. I thought, therefore, that the methods employed in obtaining this increase would be of interest to my fellow members.

From 1931 to 1935, in which latter year I took over the management at Abergavenny, the output had been gradually falling, due in the main, to the inception of the electricity supply in the former year, and also to the fact that while the Works had been making profits these were not put back into the Works, but largely used to alleviate the rates. Little or nothing had been spent for a number of years in keeping the Works thoroughly efficient, with the result that it was impossible, under the existing conditions, to maintain an adequate and consistent supply to consumers, many of whom found it advisable to go over to electricity. This is reflected in the decrease during these years from 72 million cu.ft. to 61 million cu.ft., or over 16%.

It was therefore necessary to reconstruct and modernize the whole of the Gas-Works in order to give consumers the best possible service, and it was obvious that a large sum of money would have to be spent to do this. The necessary financial arrangements having been made with the Ministry of Health the work was put in hand.

In place of the old horizontal retorts a new carbonizing plant was installed comprising:

A bench of six 40-in. C.O.L. continuous vertical retorts arranged in three settings of two retorts each.
An independent battery of two step-grate producers for the heating of the retorts.
Coal-handling plant.
Coke-handling and screening plant.

The maximum output of the plant is 435,000 cu.ft. per day, with a throughput of 22·5 tons of coal, yielding 87 therms of 450 B.Th.U. gas per ton.

The following plant was also installed:

Livesey washer, capacity 400,000 cu.ft. per day.
Two exhausters each of 20,000 cu.ft. per hour.
Liquor concentration plant, capacity 3·5 tons of crude liquor per day, yielding concentrated liquor with a 16-18% ammonia content.

It was also decided to dismantle the single-lift 88,000 cu.ft. gasholder and erect a spiral-guided three-lift holder with a capacity of 250,000 cu.ft. in a steel tank, and this is nearing completion.

It was found that the scrubber-washer was much too large for the present maximum load, and it was therefore decided to blank off four sections for the abstraction of ammonia, and use the remaining four sections for the extraction of naphthalene. Vertical retorts were decided upon on account of their high thermal yield in preference to a high residual yield—the selling price of coke being very low. The low labour costs in running a vertical installation was also a factor. They have proved the best proposition, especially in view of the extremely high price of coal at the present time, and also in view of the fact that Works of this size do not usually have a C.W.G. plant. The production of water gas *in situ* keeps down the coal consumption, which should be the objective of all gas undertakings as an answer to the exploitation of us by the colliery owners.

Below I give production costs stated in pence per 1,000 cu.ft. of the last year of the horizontal retorts compared with the first complete year of the vertical retorts (year ended March 31, 1938):

—	Old Horizontal Installation.	New Vertical Installation.
Manufacture and maintenance—		
Coal and labour	17·01	13·74
Stokers' wages	6·33	2·11
Purification	1·25	1·44
Salaries at works (one-half)	1·16	0·94
Repairs and maintenance of plant	5·03	3·27
Water charges	0·49	0·47
	31·27	20·97
Less net residual receipts	6·91	4·50
Net cost of manufacture and maintenance	24·36	16·47
Distribution—		
Repairs—		
Mains and services	1·73	1·60
Meters and stoves	3·22	1·08
Salaries at works (one-half)	1·16	0·94
Proportion of Town Hall salaries, wages of slot collector, and establishment charges	1·67	1·70
Rates, &c.	1·41	1·24
Insurance, general expenses, &c.	0·46	0·95
Superannuation fund	1·05	0·77
National insurance and sickness allowances	0·36	0·20
Showroom expenses	0·54	1·13
	35·96	26·08
Less receipts from stove and meter hire and profit on gas fittings	4·81	3·34
Net cost of manufacture, maintenance, and distribution	31·15	22·74
Add income-tax and capital charges	1·55	1·50
Net co	33·70	24·24

The item of 3·27d. per 1,000 cu.ft. for repairs and maintenance of plant appears rather high in a new plant; but consequent on the reconstruction of the Works a large amount of new work was carried out by direct labour, and is included in this figure, and will not recur.

The item also of 1·13d. per 1,000 cu.ft. for showroom expenses will also in future be considerably lower, as this figure includes decorating and fitting out the new showroom, to which I refer further on.

With regard to the item for income-tax and capital charges, in 1935 there were no outstanding loans, and income-tax was, of course, paid on the profits. Loans were raised for the reconstruction, but an obsolescence allowance on the old plant was arranged with the income-tax authorities, and therefore for a number of years no income-tax will be paid on profits. Only a portion of the annual capital charges and interest are charged for the year ended March 31, 1938, but in future years, based on the same gas make, this item will amount to 3·30d. per 1,000 cu.ft.

Very soon after the new installation was producing gas the Department were receiving congratulations from their consumers on the remarkable improvement in the quality—apparent to them after a lengthy period of unreliable service—including, of course, improved results from the 320 street lamps—and also from non-consumers on the fact that the new plant was justifying itself.

Now was the time to canvass the district for new consumers and existing consumers whose homes were not fully equipped with gas appliances. This canvass was carried out, and a Press advertising campaign launched, both of which proved most successful.

It was found in scores of houses, especially small houses in the poorer districts, that there were no means of lighting the bedrooms other than by oil lamps or candles. The majority of these agreed to have gas extended upstairs, and this was done for them at a fraction over cost price. At the same

GAS PURIFIERS

Our illustration shows the purifier installation at the new Wincobank Works of the Sheffield Gas Company. It is designed to deal with 12,000,000 cubic feet per day and comprises 12 purifiers measuring 40' square by 6' 6" deep.

Our long experience and the high standard of our work has earned for us the leading place amongst manufacturers of Gas Works Plant. Our Technical Staff is at your disposal for the preparation of schemes and tenders to meet your special requirements.

Other specialities are Gas Cleaning and Washing, Benzole Recovery, Ammonia Products, Gasholders, Tanks and General Iron and Steel Work.

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NEWTON CHAMBERS & CO., LIMITED

THORNCLIFFE IRONWORKS • NR. SHEFFIELD

time orders came in rapidly for cookers, fires, water heaters, wash-boilers, &c. Many of the large shopkeepers who had gone over to electric lighting began to make enquiries regarding installing modern gas fittings, and were won over. Under the last Shops Act shops must be adequately heated, and all the shops in the town were circularized and followed up by a canvasser, with the result that a large number of radiators were installed, especially in the large multiple shops in the main street. Several elementary schools were likewise supplied. A number of farms were equipped with lighting, cooking, and heating appliances, and some with bottle sterilizing machines. The golf club house was equipped with lighting, heating, cooking, and several hot water appliances. These latter supplies entailed very long runs of service pipe, and owing to the inconsistent supply had hitherto proved prohibitive. The Municipal Offices and Council Chamber, hitherto inadequately lighted, were fitted with six-light "Bon Marché" lamps, all complete with switches.

The demand for gas grew heavier; services, many of which were ½ in. and ¾ in. (very often with two and three supplies off one ¾ in. service) had to be replaced by 1 in. As a result of the increased consumption by the existing consumers in a village about a mile from the Works complaints were received of lack of pressure, and it was found necessary to replace the whole of the 2 in. main by 4 in.

I give below the figures for new consumers, appliances, &c., fixed during the year ended March 31, 1935, compared with the year ended March 31, 1938.

Year.	New Consumers.	Cookers.		Fires and Radiators.	Wash-Boilers and Water Heaters.	Lights.
		Cash & H.P.	Slot.			
1935 ..	61	46	215	38	34	320
1938 ..	236	221	156	214	160	1,180

Up to 1935 the question of hire purchase had not been very seriously considered, and only a small number of appliances had been put out on those terms. I would say here, too, that at this time 95% of the cookers in use were of the black type on simple hire terms. The advantage of hire purchase of high-grade cookers, &c., was stressed, and scores of consumers had their black cookers replaced by high-grade all-enamel cookers on those terms, and many for cash. Hire purchase is for terms of three and five years as follows:

Cookers and refrigerators, three and five years.

Fires, radiators, wash-boilers, &c., three years only.

In no case does the term extend beyond five years.

Very few of the new 236 consumers in 1938 were in new houses, but were persons who had been content with oil illuminant and coal heating or who had turned over from electricity. A large number of slot cookers were installed in slum clearance houses.

Although small fittings and appliances are fixed at a little over cost, as I have already pointed out, it is not the practice to insist on cash payment, and in quite a large number of cases the meters are set at 15 cu.ft. for 1d. or 180 cu.ft. for 1s., which gives a rebate of nearly 3½d. in the 1s. or 5s. 6d. in the £. I should point out here that the price of gas to prepayment consumers is 4s. per 1,000 cu.ft., or 19 ft. for 1d., 228 cu.ft. for 1s., with a normal rebate of 1d. in the 1s. or 1s. 8d. in the £.

The whole of the rebate is retained by the slot collector until the account has been cleared off, and he then gives the usual receipt to the consumer, keeping a carbon copy for office use. He has in addition a card for each consumer showing the consumption; amount collected; amount of rebate; amount outstanding on fittings, cooker hire, &c.; and the number and description of the gas appliances in the house.

Showroom.

For some years the showroom in the main street had been too small, and much larger and more spacious premises were secured on the ground floor of the Town Hall buildings, practically opposite the old showroom.

At the rear of the showroom is the rate collector's office, and the showroom is so arranged that persons paying their rates and accounts are compelled to pass through it, and there is no doubt that quite a number of persons have become interested and have purchased appliances. In the new showroom water heaters, cookers, and refrigerators can all be demonstrated in action.

In these days of intense electrical competition it is absolutely essential that it should be clearly demonstrated that gas can be used not only efficiently but artistically, and that no expenditure is more desirable than expenditure on the showroom.

Industrial.

At the time I took over the management in 1935 a small potato crisp company were operating in the district, their methods of cooking the crisps being by oil. When the new plant started to produce gas I opened up negotiations with the Company with the view to getting them to install an experimental pan fired by gas. They finally agreed to this, and a service was run to the factory, and gas supplied for the experiments without charge. The Company was greatly impressed with the results of the tests, and agreed to scrap all the oil-fired and fix 24 gas-fired ones.

I give the results of the tests and the comparative costs:

GAS—	
Potatoes cooked per hour	55 lb.
Cooking oil consumed per hour	0·75 gall.
Gas consumption per hour	183 cu.ft.
Cost of gas at 5d. per therm	8·7d. per cwt. cooked
CRUDE OIL—	
Potatoes cooked per hour	45 lb.
Cooking oil consumed per hour	0·82 gall.
Cost of crude oil consumed	9·84d. per cwt. cooked

A 4 in. supply was laid to the factory and a 5,000 cu.ft. per hour meter fixed. Other appliances such as radiators for heating the stores, packing rooms, offices, &c., as well as machines for sterilizing the tins and gas-fired hot air appliances for drying the tins were fixed.

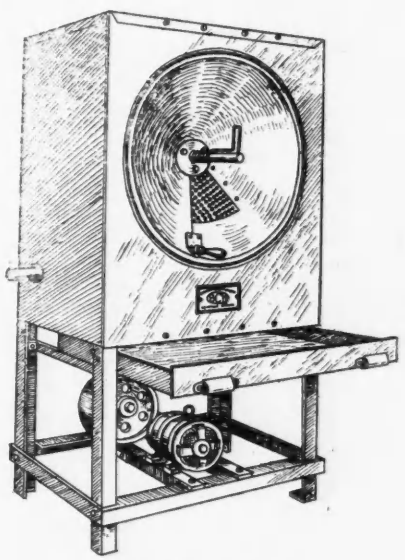

Fig. 1.—Popcorn Machine.

Later the Company started a confectionery department, and as a result of the satisfaction they had obtained by using gas in the potato crisp department they decided to have gas-fired apparatus in the new department. These consist of:

Twelve popcorn machines, each of 150 cu.ft. per hour capacity, and capable of cooking 2 lb. of corn in 1¼ minutes (see fig. 1).

Six sugar boiling pans (see figs. 2a and 2b).

Two peanut roasting machines with a consumption of 200 cu.ft. per hour each and capable of roasting 60 lb. of nuts in 25 minutes.

This confectionery department has now been extended to another building where additional roasters, &c., have been fixed, together with radiators, and all gas lighting complete with switches.

The basic price of gas was fixed by agreement for 15 years

at 5d. per therm (this is for all gas used, including lighting) with a rise or fall according to the fluctuation of the price of coal. At the present time, owing to the high price of coal, this consumer is being charged 6·4d. per therm.

A firm of ironfounders in the district were using suction gas as a means of generating power for driving the various machines in the foundry. Experiments were carried out with a view to adopting town gas, and as a result the producer gas has been done away with, and the engine is now worked on town gas. It is interesting to note that at a price of 5·3d. per therm, which is the present charge, it is equal to the all-in cost—*i.e.*, labour, coal, &c.—of suction gas.

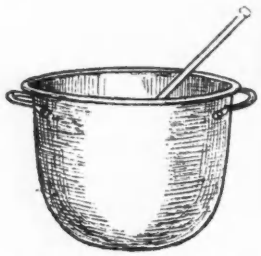

Fig. 2a.—Copper Mixing Pan for Popcorn Machine.

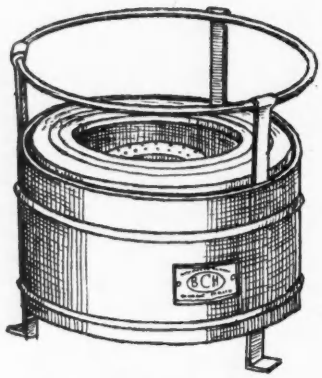

Fig. 2b.—Gas Fire for Popcorn Machine.

Further uses have also been found for gas in the way of oxy-coal gas cutting appliances, and the consumers are now converting their coal-fired core-drying oven to gas. The present load at this foundry is 2 million cu.ft. per annum.

Besides the two industrial consumers referred to, the only big consumer is the L.M.S. Railway Company. In addition to the lighting of two stations, engine sheds, engineering works, carriage sheds, signal boxes, &c., the motive power for fitting shops and saw mills is generated by gas supplied by this Department. The Railway Company have recently scrapped the coke-fired metalling hearth and fixed a gas-fired one. This hearth consists of two low-pressure nozzle burners fitted on swivels which are used for burning off the old metal on the sides and steps of axle boxes, &c., and two melting pots for heating the ingots of white metal. Consumption of this appliance is 700 cu.ft. per hour.

I have to the best of my ability attempted to show how a small undertaking on the down grade has been modernized, new consumers obtained, and an atmosphere of gas-mindedness created in the locality.

Discussion.

The PRESIDENT (Mr. J. Stephenson, Aberdare) remarked that it was greatly to the credit of Mr. Howells that he had brought his Undertaking up to its present condition. He had recently visited his works and inspected the new plant, which was going to be of immense benefit to the undertaking. He had hoped that the author would have had something to say about the problem of installing a new holder in an old tank. At some future date they would probably have some interesting information from him on this particular point.

Mr. H. MATTERFACE (Monmouth) said that, as a neighbour of Mr. Howells for many years, he would like to congratulate him on the way in which he had brought his undertaking up to date. It was all to the good when a young man came from a rather bigger works to take over the management of an undertaking of this character. Some six years ago, at Monmouth, they went in for verticals of the Woodall-Duckham type, which had been very successful. Up to the present the only repairs had been to the bottom ironwork. Gas had been produced from them very cheaply, and they were able to sell it at a reasonable price. The only disadvantage he knew of, when adopting verticals in place of horizontal retorts, was that one required more storage capacity. He would have liked a bigger holder at the same time that he put in the verticals. He found the coke produced from the verticals much better for the bakers. For industrial purposes, they did need a cutter; the coke required sizing-up.

Mr. W. M. Fox (London) said he could have wished that Mr. Howells had elaborated more the figures of cost. There seemed to be an error in addition in the column of manufacture and maintenance costs of the new vertical installation. The author said he had to pay a high price for coal, but his figure for coal and labour was extremely low. On the other hand, the residuals figure was also very low. But different workers presented their figures in different ways. The author referred to his success in obtaining a gas load at the expense of producer gas, and said that his price of 5·3d. per therm was equal to the all-in cost of suction gas. He (Mr. Fox) recalled a case in which the net cost of suction gas was somewhere about 2d. per therm, to which fell to be added 1·5d. to 1·7d. for capital charges and maintenance, making the total charge for suction gas slightly under 4d. per therm. It would be very difficult for small undertakings to compete with this figure. But here, again, the author's figures were too scanty to allow of close comparison.

An Advantage of Gas Lighting.

Mr. H. D. MADDEN (Cardiff) remarked that he would like to place on record their deep appreciation of this Paper. Mr. Howells had had an extraordinarily busy time, but he had found it possible to give them a very interesting Paper. One point which he would like to bring out was the author's reference to lighting bedrooms. Mr. Howells had found in scores of houses, especially small houses in the poorer districts, that there were no means of lighting the bedrooms other than by oil lamps or candles. As an Industry, they were very apt to overlook the fact that there was a potential load in bedrooms which were too small for a fire. On a chilly evening the room could be brought to a comfortable temperature by lighting a gas burner. Then there was another potential field. Since the war people had got accustomed to dark and dreary halls, &c. There was an opportunity here of bringing gas lighting back to the halls and passages. Not only would it light them, but it would give just the little warmth which was very often beneficial. For shops, also, they could offer warmth as well as light by providing gas burners and radiators. Members should make all the use they could of this advantage of gas lighting.

Mr. F. J. EDMONDS (Waterford) expressed his personal thanks to the author for having provided some food for thought. He had "hit the nail on the head" at the beginning of the Paper when saying that, "while the works had been making profits, these were not put back into the works, but largely used to alleviate rates." Consequently, little or nothing had been spent for a number of years in keeping the works thoroughly efficient. This was a bad policy. He agreed that it would have been useful to have further data on costs. Had the author worked out his tables with the cost of coal and the rates for labour the same right through? Because if the prices of coal and the rates for labour varied, there was no real comparison between the horizontal retorts and the vertical installation. The author said that very soon after the new installation was producing gas the Department were receiving congratulations from their consumers on the remarkable improvement in the quality, apparent to them after a lengthy period of unreliable service. How was this achieved? Was it by sending out gas of a higher calorific value, or was a better service given to the consumers (say) through the distribution department? He had been in competition with a large suction gas plant in a foundry in Waterford, and by making a rather bold venture, and giving a supply under a guarantee of 7 millions for 7 years, his Company were able to beat the price of the suction gas. It was for enamelling, and suction gas would have to be purified and washed, at an additional cost. His Company waived all capital charges, and secured the business.

The PRESIDENT, proposing a hearty vote of thanks to the author, remarked that the fact that so many of the cookers which Mr. Howells had out before the new plant was installed were of the old black type, and that numbers of these had since been replaced by modern cookers, made his achievement all the greater. Black cookers on hire were often of a very old pattern, and their replacement by modern appliances in the first instance meant a reduced consumption. But by adding to the number, the object was attained of increasing the consumption. In all probability with the old plant there was a difficulty in maintaining a regular quality as regarded calorific value and composition, whereas with the new plant he had been able to keep a straight line, and consumers would undoubtedly benefit from this.

Good Service Appreciated.

Mr. W. CLARK JACKSON (Neath), seconding the vote of thanks, stated that Mr. Howells was with him for several years, and during that time carried out his duties with earnestness, showing an ever-readiness to learn. It was clear to him that when Mr. Howells went to Abergavenny he had a fairly big job before him. In the short time at his disposal, he had done first-class work for the Corporation, and had enhanced his reputation. It was of no use to try to push sales, unless one was in a position to give customers an adequate supply of gas of a satisfactory character,

and the author's aim from the very beginning had been to assure this. He remembered many years ago discussing with Mr. Bruce Anderson the advantages of cheap gas, and Mr. Anderson saying: "If I had two works of equal size, and one works was selling gas at (say) 3s. and the other at 3s. 6d., if the works selling at 3s. 6d. used that extra 6d. in giving additional service and in looking after the consumer in every respect, it would find the consumption increasing out of all recognition as compared with the undertaking selling the cheaper priced gas." This remark had remained firmly fixed in his mind, and he believed that service to the consumer more than counterbalanced something extra on the price of gas. Mr. Howells had shown that it was possible to sell a great many appliances through a slot meter rebate. He (the speaker) had proved this for himself. People did not mind leaving a little money in this way, and having it devoted to fitting their premises with modern appliances. As to the author's remark that gas at 5·3d. per therm was equal to the all-in cost of suction gas, everything depended upon the size of the suction gas plant. If it was a smallish plant, with labour charges high, the figure might be reasonable, but competing with a large suction gas plant, with automatic control, town gas at 5·3d. per therm would have no chance at all.

The Author's Reply.

Mr. HOWELLS, in a written reply to the discussion, said: In reply to Mr. Fox, I have not my printed copy of the Paper at hand, but in the original typed copy sent to the printers there is no error in the addition in the column of manufacture and maintenance costs which totals 20·97d. With regard to coal and labour costs, although the price of coal used in the vertical retorts is considerably higher than in the old horizontals, the labour costs, due to the mechanical handling of coal, are considerably reduced. Similarly, stokers' wages are reduced, as the plant can be operated by one man per shift. Again, the figures for the vertical plant are worked out on a large increase in the make. I agree with Mr. Fox that, generally speaking, the figure for suction gas should be just under 4d. per therm; but in my case where town gas is competing at 5·3d. per therm it should be borne in mind that I am dealing with a small foundry, so that labour cost per therm of suction gas produced is relatively higher, and that for intermittent working the question of fuel on tap is a factor outweighing any monetary value.

The above explanations will also answer the point raised by Mr. Edmunds with regard to coal and labour, and so far as the calorific value is concerned the remarks on this question were summed up by the President.

I should like to take this opportunity of saying how disappointed I was at being unable to read the Paper personally due to my mishap, and to thank the members for their kind reception of my Paper, and for their good wishes.

Extensions at Belfast

Waterless Gasholder and Coal-Handling Plant

A new waterless gasholder in course of construction at the Works of the Belfast Gas Department was inspected by the members of the Corporation accompanied by Mr. J. D. Smith, Engineer and Manager, and Mr. J. L. Hyslop, Assistant Manager. The gasholder will have a capacity of 5 million cu.ft. of gas. It has a diameter of 176 ft. and will be 235 ft. high. To connect with the existing outlet main a new 36-in. main is being laid. A new steel girder bridge has just been constructed over the River Blackstaff to carry this and two other 36-in. mains. When the new holder is brought into use the Works will have a total storage capacity of about 15 million cu.ft. The average daily output of the works is about 19 million cu.ft. in winter, and between 11 million and 12 million cu.ft. in summer.

At the same Works new coal-handling plant at the cost of £33,000 has been installed to replace the plant which has done service for 52 years. By the old method coal was dug by manual labour from lighters, emptied into hand-propelled trucks, weighed, and pushed by hand a distance of some 600 ft. to the retort benches. In twenty-four hours with three shifts of men only 650 or 700 tons of coal could be handled daily, an amount insufficient for mid-winter requirements. By the new system the coal is lifted by grabs from the lighters, discharged into a hopper and passed through a weigher. The coal then passes automatically to an adjustable feeder, by which it is sent to a system of five-band conveyors travelling at 200 ft. per minute. In this way it is transported a distance of 1,000 ft. to the coal store where it can be discharged to the vertical retorts or into any part of the coal store. The two grabbing cranes working together can unload some 200 tons per hour from the lighters. This contrasts favourably with the former procedure by which a total of only 800 tons a day could be unloaded. During the last financial year the operating cost of coal-handling was 1s. 2d. per ton, but the new plant has reduced that amount to less than 3d. per ton.

THE
EWART WATER HEATER

STANDS FOR RELIABILITY

The new 'EMPIRE' HEATER, ILLUSTRATED ABOVE, IS AN EXAMPLE OF EFFICIENCY COMBINED WITH MODERN OUTLINE, AND IS ONLY ONE OF THE EXTENSIVE RANGE OF EWART ALL BRITISH GAS WATER HEATERS. A century's experience has helped to build up these Heaters into the most economical, labour-saving and lowest priced Heaters of the present day.

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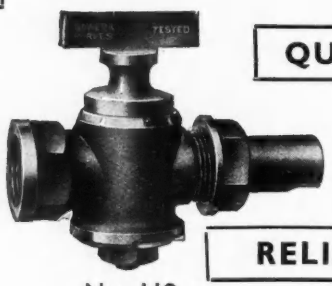

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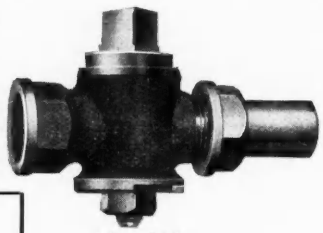

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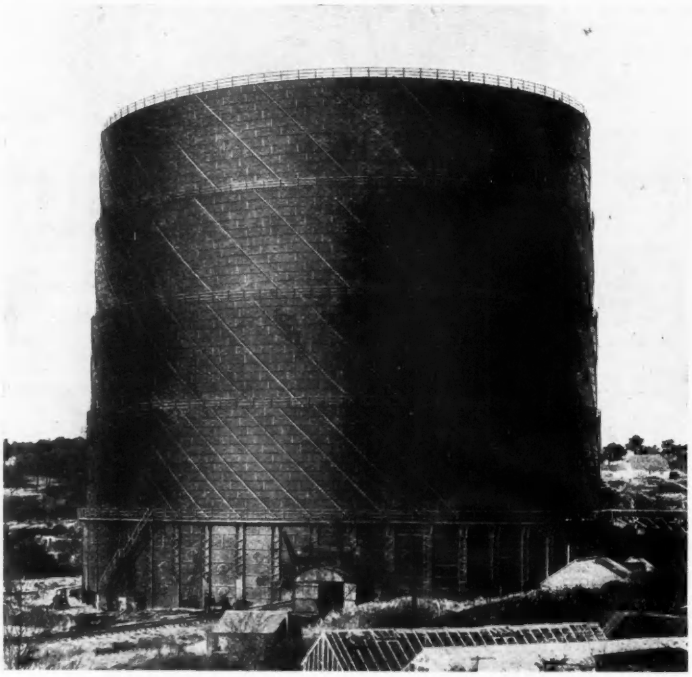

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MAKERS OF THE LARGEST SPIRAL HOLDER IN A STEEL TANK IN THE WORLD.

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Markets and Manufactures

Current Sales of Gas Products

The London Market

LONDON, *Sept.* 26.

Prices of Tar Products remain unchanged at the following levels:

Pitch nominal at about 33s. per ton f.o.b.

Creosote, about 4½d.

Refined tar, 3¾d.

Pure toluole, 2s. 2d. to 2s. 3d.

Pure benzole, about 1s. 9d.

95/160 solvent naphtha, 1s. 7d.

90/160 pyridine, 10s.

All per gallon naked at makers' works.

The Provinces

Sept. 26.

Crude Gas-Works Tar, 15s. to 20s.

To avoid misunderstanding, it is necessary to state that the above price is not claimed to represent a market value. It is a price worked out from week to week upon a system which has been used for many years as a basis for the fixing of certain contracts for crude tar of varying qualities in different areas.

The average prices of gas-works products during the week were: Pitch—East Coast, 31s. to 32s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 31s. to 32s.* Toluole, naked, North 1s. 7½d. to 1s. 9d. Coal tar, crude naphtha, in bulk, North, 7½d. to 8¼d. Solvent naphtha, naked, North, 1s. 4½d. to 1s. 5d. Heavy naphtha, North, 1s. 3d. to 1s. 3½d. Creosote, *ex* works, in bulk, North, liquid and salty, 4⅜d. to 4⅝d.; low gravity, 4¼d. to 4¾d. Carbolic acid, 60's, 1s. 9d. to 2s. Naphthalene, £13 10s. to £16. Salts, 70s. to 75s., bags included. Anthracene, "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal; "B" quality unsalable. Heavy oil: Unfiltered heavy tar oil, min. gr. 1,080, 4¾d. to 4⅞d.; filtered heavy tar oil, min. gr. 1,080 5¼d. to 5¾d.; heavy tar oil, gr. less than 1,080, 4½d. to 4¾d.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Scotland

GLASGOW, *Sept.* 24.

Although enquiries are, if anything, more numerous, market is still quiet with prices unstable.

Crude gas-works tar.—Actual value is about 37s. to 38s. per ton *ex* works in bulk.

Pitch is without interest, to-day's value being about 24s. per ton f.o.b. for export and about 22s. per ton *ex* works in bulk for home trade.

Refined tar.—Price is unchanged at 3¾d. to 4d. per gallon in the home market, while for export, competition is keen at round 3d. per gallon in buyers' packages at makers' works.

Creosote oil.—Most consumers are well covered and new business is keen at the following prices: Specification oil, 4⅝d. to 4⅞d. per gallon; low gravity, 5¼d. to 5½d. per gallon; neutral oil, 4¾d. to 5d. per gallon; all *ex* works in bulk.

Cresylic acid.—Buying is on a small scale and values are approximately as follows: Pale, 97/99%, 1s. 5d. to 1s. 7d. per gallon; dark, 97/99%, 1s. 3d. to 1s. 5d. per gallon; and pale, 99/100%, 1s. 8d. to 1s. 11d. per gallon; all according to quality, *ex* works in buyers' packages.

Crude naphtha is unchanged at 5½d. to 6d. per gallon *ex* works in bulk, according to quality.

Solvent naphtha.—90/160 grade is 1s. 3½d. to 1s. 4d. per gallon, and 90/190 heavy naphtha is 1s. 1d. to 1s. 1½d. per gallon.

Motor benzole is round 1s. 3d. to 1s. 4d. per gallon.

Pyridine.—90/160 grade is 8s. to 9s. per gallon and 90/140 grade is 9s. to 10s. per gallon.

Benzole Prices

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole ..	0	9½	to	0	10	per gall. at works
Motor „ ..	1	3	„	1	3½	„ „ „
90% „ ..	1	4	„	1	4½	„ „ „
Pure „ ..	1	8	„	1	8½	„ „ „

Contracts Advertised To-Day

Chlorination Plant.
Wallasey Gas and Water Department. [p. 822.]

Coal.
Ashford (Kent) Gas Department. [p. 822.]

Coke Screens.
Manchester Gas Department. [p. 822.]

Gasholder.
Municipality of Singapore. [p. 822.]

Overseas Opportunities

Steel Pipes.

H.M. Trade Commissioner at Johannesburg reports that the Rand Water Board is calling for tenders (Contract No. 564) for the supply and delivery, free-on-rail, at the Germiston Railway Station, of 13,000 ft. of 24-in. internal diameter steel pipe. Tenders, endorsed "Contract No. 564—Tender for Pipes," should be addressed to the Secretary, Rand Water Board, 74, Commissioner Street (P.O. Box 1703), Johannesburg, South Africa, by whom they will be received up to noon on Nov. 8, 1938. Local representation is essential, and the Department of Overseas Trade is prepared to furnish firms desirous of tendering for the supply of pipes of United Kingdom manufacture, and not represented in South Africa, with the names of United Kingdom merchant houses with local connexions who may be willing to handle tenders on their behalf. All telephonic communications with the Department in regard to this tender should be addressed exclusively to Extension 253. (Ref. T. 26997/38.)

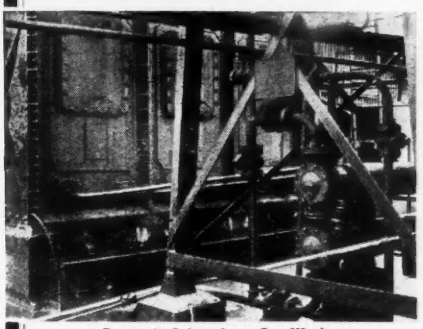
Gas and Water Pipes and Fittings.

A firm of agents established in Bahia wishes to obtain the representation of United Kingdom manufacturers of the above for Bahia. (Ref. No. 212.)

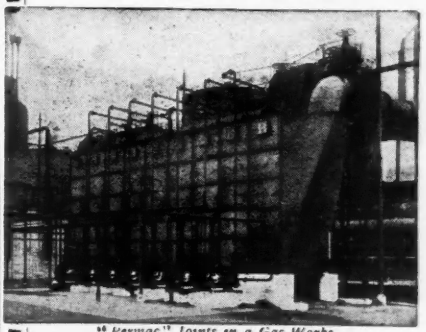
There's only one

Permac!

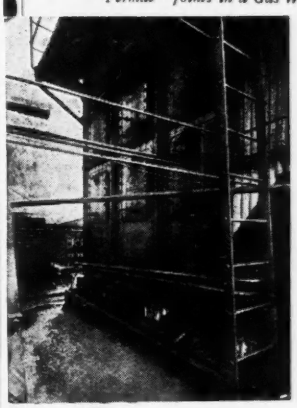
METAL-TO-METAL JOINTING MATERIAL.



"Permac" Joints in a Gas Works



"Permac" Joints in a Gas Works.



"Permac" Joints in a Gas Works.

Be sure you get it!

Here is a selection of "Permac" joints photographed in various Gas Works. "Permac," the Metal-to-Metal Jointing, has been holding up difficult joints like these for over 25 years. Send for particulars.

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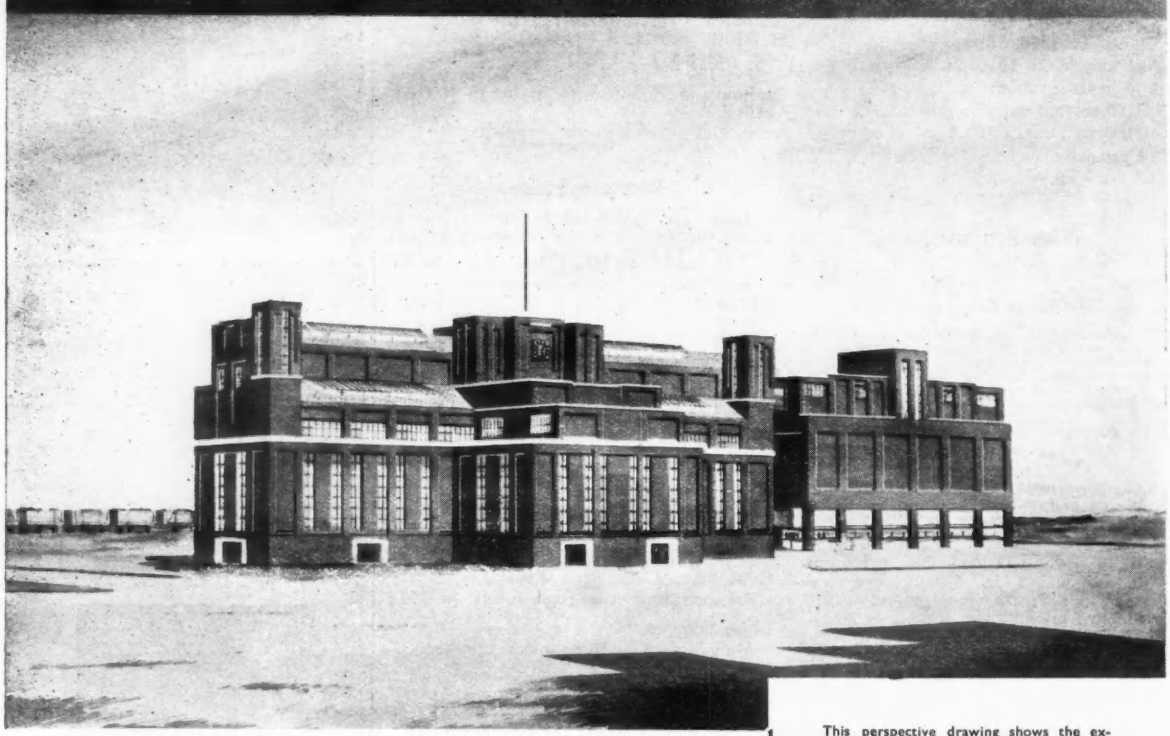
NEW

Glover-West PLANT FOR BLACKPOOL



This perspective drawing shows the exterior design of the installation of Glover-West continuous vertical retorts ordered by the BLACKPOOL Gas Department for the new Corporation Gas Works to be established at Marton, as it will appear when completed. Interesting and important new features will make this 72-retort plant, with its extensive coal and coke handling and waste-heat recovery equipment, an outstanding example of modern advances in carbonizing practice.

A carbonizing plant which will be one of the most complete and economical in operation so far erected in this country.

Dignity allied with utility in architectural treatment will be a striking external feature of Blackpool's new Glover-West installation. It will also embody the many advantages and amenities upon which the world-wide prestige of the Glover-West system has been built during 30 years of constant research and development for the advancement of gas production methods.

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LONDON: COLUMBIA HOUSE, ALDWYCH, W.C.2 'Phone: HOLBORN 4108 : 'Grams: "WESGASCO, ESTRAND, LONDON"

GAS STOCKS AND SHARES

Stock Exchange business last week was naturally reduced to a minimum. At one time there was a short revival in prices, but this soon gave way to hesitation and the week closed on a distinctly pessimistic note. Gilt-edged stocks were particularly vulnerable and under the influence of Continental selling prices were again marked down. Industrials experienced a general fall, prices in many instances gaining a fraction one day to lose a point or two the next. The oil market suffered a similar fate and although at one time some interest was displayed in the Kaffir market prices eventually closed weaker.

Business in the Gas market, though of small dimensions, was a little heavier than a week ago. Prices on the whole remained fairly steady, though in common with other sections any movements were in a downward direction. The general trend is reflected in the value of Gas Light units which have been falling steadily for the past few weeks and which dropped a further 6d. to 22s., the lowest price reached since 1932. The heaviest fall was that of 10 points in Alliance and Dublin to 137, while apart from *ex* div. markings other stocks to be marked down included Hornsey 3 points, United Kingdom 6d., and South Metropolitan which fell another point to 104½.

Quotations on the Provincial Exchanges, apart from *ex* div., closed unchanged, but in the Supplementary List, which provided the only upward movement, Romford 5% debenture was marked up 1 point to 114½.

It will be seen that the issue of £200,000 Watford and St. Albans 4% redeemable preference stock is now officially quoted, and has therefore been added to the list below.

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Sept. 23	Rise or Fall on Week.
1,767,439	Sept. 5	8	8	Alliance & Dublin Ord. ...	132—142	—10
374,000	June 20	4	4	Do. 4 p.c. Deb. ...	93—108	...
734,733	May 9	5	5	Asscd. Gas & Water U'd'ts Ord.	17/6—19/6	...
500,000	,,	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	19/—21/–	...
444,389	,,	§–/4	4	Do. 4 p.c. Red. Cum. Pref.	19/—20/–	...
296,523	,,	4	4	Do. 4 p.c. Irred. Cum. Pref.	16/—18/–	...
500,000	Sept. 5	3½	3½	Do. 3½ p.c. Red. Deb. ...	93—98	...
560,070	Aug. 22	7	7	Barnet Ord. 7 p.c.	157—162	...
300,000	Apl. 4	1/4½	1/9½	Bombay, Ltd.	24/6—26/6	...
180,435	Aug. 22	9½	9½	Bournemouth sliding scale ...	195—205	...
640,407	,,	7	7	Do. 7 p.c. max. ...	157—162	...
495,960	,,	6	6	Do. 6 p.c. Pref. ...	133—139	...
50,000	June 20	3	3	Do. 3 p.c. Deb. ...	78—83	...
312,025	,,	4	4	Do. 4 p.c. Deb. ...	98—103	...
335,000	,,	5	5	Do. 5 p.c. Deb. ...	115—120	...
357,900	Aug. 8	7½	7½	Brighton, &c., 6 p.c. Con. ...	142—147	...
659,955	,,	6½	6½	Do. 5 p.c. Con. ...	126—131	...
205,500	,,	6	6	Do. 6 p.c. 'B' Pref.	125—130	...
855,000	Sept. 19	8	7	British Ord.	136—141*	—2
100,000	June 3	7	7	Do. 7 p.c. Pref.	140—145	...
350,000	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...
120,000	,,	4	4	Do. 4 p.c. Red. Deb. ...	94—99	...
450,000	,,	5	5	Do. 5 p.c. Red. Deb. ...	102—107	...
450,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	94—99	...
100,000	22 May'33	6	4	Cape Town, Ltd.	1—2	...
100,000	6 Nov.'33	4½	4½	Do. 4½ p.c. Pref. ...	1½—3½	...
150,000	June 20	4½	4½	Do. 4½ p.c. Deb. ...	60—70	...
626,860	July 18	6	6	Cardiff Con. Ord.	118—123	...
237,860	June 3	5	§	Do. 5 p.c. Red. Deb.	105—110	...
98,936	Sept. 19	2/–	2/–	Colombo Ord....	1⅞—1¾*	...
24,510	,,	1/4½	1/4½	Do. 7 p.c. Pref.... ...	2/6—24/6*	—/6
739,453	Mar. 21	–/11·48	–/11·48	Colonial Gas Assn. Ltd. Ord.	16/6—18/6	...
296,144	,,	1/3·30	1/3·30	Do. 8 p.c. Pref. ...	23/—25/–	...
1,775,005	Aug. 8	5	5	Commercial Ord.	79—84	...
140,000	,,	—	§13/4	Do. 4 p.c. Red. Pref.	97—100	...
620,000	June 3	3	3	Do. 3 p.c. Deb. ...	72—77	...
286,344	Aug. 22	5	5	Do. 5 p.c. Deb. ...	113—118	...
200,000	,,	—	§30/2	Do. 3½ p.c. Red. Deb.	99—102	...
807,560	Aug. 8	7	7	Croydon sliding scale ...	135—140	...
644,590	,,	5	5	Do. max. div. ...	105—110	...
620,385	June 20	5	5	Do. 5 p.c. Deb. ...	115—120	...
239,000	Aug. 8	5	5	East Hull Ord. 5 p.c.	94—99	...
186,155	Aug. 8	6	6	East Surrey Ord. 5 p.c. ...	116—121	...
176,211	June 3	5	5	Do. 5 p.c. Deb. ...	115—120	...
250,000	July 4	4	8	Gas Consolidation Ord. 'B' ...	22/—23/–	+2
250,000	May 9	4	4	Do. 4 p.c. Red. Cum. Pref.	17/6—19/6	...
9,223,324	Aug. 8	5⅜	5⅜	Gas Light & Coke Ord. ...	21/6—22/6*a*	—/6
2,600,000	,,	3½	3½	Do. 3½ p.c. max. ...	78—82	...
4,477,106	,,	4	4	Do. 4 p.c. Con. Pref. ...	98—102	...
2,993,000	July 4	—	3½	Do. 3½ p.c. Red. Pref. ...	100—103	...
8,602,497	May 23	3	3	Do. 3 p.c. Con. Deb....	77—82	...
3,642,770	,,	5	5	Do. 5 p.c. Red. Deb....	109—114	...
3,500,000	,,	4½	4½	Do. 4½ p.c. Red. Deb....	108—113	...
700,000	Sept. 5	3½	3½	Do. 3½ p.c. Red. Deb....	96—99	...
270,466	Aug. 22	6	6	Harrogate New Cons. ...	117—122	...
157,500	Mar. 21	1/2⅝	‡1/–	Hong Kong and China Ord. ...	¾—1	...
213,200	Aug. 8	6	5⅝	Hornsey Con. 3½ p.c. ...	97—102	—3
5,600,000	May 9	8	12	Imperial Continental Cap ...	110—115	...
223,130	July 18	3½	3½	Do. 3½ p.c. Red. Deb....	87—92	...
235,242	Aug. 8	8½	8½	Lea Bridge 5 p.c. Ord. ...	164—169	...
11,751	Aug. 22	10	8	Maidstone 5 p.c. Cap. ...	175—185	...
63,480	June 20	3	3	Do. 3 p.c. Deb.... ...	70—75	...
45,000	May 23	†10	†10	Malta & Mediterranean ...	135—140	...
392,000	Apl. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	99—102	...
231,977	Aug. 22	5	5	M.S. Utility 'C' Cons. ...	99—104	...
968,658	,,	4	4	Do. 4 p.c. Cons. Pref.	95—100	...
390,076	June 20	4	4	M.S. Utility 4 p.c. Deb. ...	97—102	...
148,955	,,	5	5	Do. 5 p.c. Deb. ...	113—118	...
675,000	May 9	†6	†6	Montevideo, Ltd.	73—78	...
250,000	Aug. 8	7½	7½	North Middlesex 6 p.c. Con.	142—147	...
396,160	Aug. 8	5	5	Northampton 5 p.c. max. ...	105—110	...
300,000	Apl. 25	†9	†7	Oriental, Ltd.	147—152	...
468,537	June 3	8	8	Plymouth & Stonehouse 5 p.c.	150—155	...
621,667	Aug. 8	8½	8½	Portsmouth & Gosport Cons.	157—162	...
241,446	,,	5	5	Do. 5 p.c. max. ...	100—105	...
73,350	,,	5	5	Do. 5 p.c. Pref. ...	107—112	...
75,000	,,	4	4	Do. 4 p.c. Pref. ...	94—99	...
114,000	Aug. 8	5	5	Preston 5 p.c. Pref.	104—109	...
247,966	June 3	4	4	Primitiva 4 p.c. Cons. Deb. ...	98—103	...
625,959	July 18	4	4	Do. 4 p.c. Red. Deb. ...	94—99	...
15,000	Sept. 5	6	6	San Paulo 6 p.c. Cum. Pref. ...	8¼—9*	...
441,275	Sept. 19	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	20/6—22/6*	—/6
460,810	Sept. 19	–/10½	–/10½	Do. 4½ p.c. Cum. Pref.	19/6—21/6*	...
133,201	Aug. 22	5	8½	Shrewsbury 5 p.c. Ord. ...	127—132	...
9,000	June 3	4	‡4	South African Ord.	4½—5½	...
1,371,752	Aug. 22	1/2⅜	1/2⅜	South East'n Gas Cn. Ld. Ord.	21/—23/–	...
871,636	,,	–/10½	–/10½	Do. 4½ p.c. Red. Cum. Pref.	20/—22/–	...
498,818	,,	4	4	Do. 4 p.c. Cum. Pref. ...	18/—20/–	...
450,000	Aug. 8	4	4	Do 4 p.c. Deb.	99—102	...
150,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	94—97	...
6,709,895	Aug. 8	6	5	South Met. Ord.	103—106	—1
1,135,812	,,	6	6	Do. 6 p.c. Irred. Pref. ...	128—133	...
850,000	,,	4	4	Do. 4 p.c. Irred. Pref. ...	95—100	...
1,895,445	June 20	3	3	Do. 3 p.c. Deb.	77½—80½	...
1,000,000	July 4	5	5	Do. 5 p.c. Red. Deb. ...	110—113	...
600,000	,,	—	§31/–	Do. 3½ p.c. Red. Deb. ...	99—102	...
1,543,795	Aug. 8	6	6	South Suburban Ord. 5 p.c. ...	115—120	...
512,825	,,	5	5	Do. 5 p.c. Pref.... ...	108—113	...
500,000	,,	4	4	Do. 4 p.c. Pref.... ...	95—100	...
250,000	,,	3½	3½	Do. 3½ p.c. Red. Pref. ...	97—100	...
888,587	June 3	5	5	Do. 5 p.c. Deb.	115—120	...
250,000	,,	4	4	Do. 4 p.c. Deb.... ...	96—101	...
200,000	Aug. 8	3½	3½	Do. 3½ p.c. Red. Deb. ...	93—98	...
427,859	Sept. 19	8⅝	9⅜	S. Western Gas & Water Ord.	16/—18/–*	...
160,523	,,	–/10⅜	–/10⅜	Do. 4½ p.c. Red. Cum. Pf.	19/—21/–	...
110,000	June 3	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...
750,541	Aug. 8	5½	5	Southampton Ord. 5 p.c. ...	105—110	—1
148,836	June 3	4	4	Do. 4 p.c. Deb.	95—100	...
350,000	Aug. 8	5½	5½	Swansea 5½ p.c. Red. Pref. ...	106—111	...
200,000	June 3	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...
1,076,490	Aug. 8	6⅜	6⅜	Tottenham and District Ord.	126—131	...
409,835	,,	5½	5½	Do. 5½ p.c. Pref. ...	117—122	...
62,235	,,	5	5	Do. 5 p.c. Pref. ...	110—115	...
334,615	June 3	4	4	Do. 4 p.c. Deb. ...	96—101	...
85,701	Apl. 25	6	6	Tuscan 6 p.c. Red. Deb. ...	95—101	...
1,131,550	Aug. 22	6	4	U. Kingdom Gas Cor. Ord. ...	18/—20/–	—/6
1,051,280	May 9	4½	4½	Do. 4½ p.c. 1st Cum. Pref.	19/—21/–	—/6
762,241	,,	–/1·15	4	Do. 4 p.c. 1st Red. Cum. Pf.	19/—21/–	...
745,263	June 3	4½	4½	Do. 4½ p.c. 2nd Non-Cum.Pf.	16/—18/–	...
1,000,000	Sept. 5	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—98	...
375,689	Aug. 8	7	7	Uxbridge, &c., 5 p.c.	132—137	...
133,010	,,	5	5	Do. 5 p.c. Pref. ...	108—113	...
1,371,138	Aug. 8	7	7	Wandsworth Consolidated ...	135—140	...
2,525,768	,,	4	4	Do. 4 p.c. Pref. ...	98—101	...
1,343,964	June 3	5	5	Do. 5 p.c. Deb. ...	115—120	...
383,745	,,	4	4	Do. 4 p.c. Deb. ...	97—102	...
400,000	,,	—	§25/–	Do. 3½ p.c. Red Deb.	97—102	...
558,342	Aug.	7	6⅞	Watford and St. Albans Ord.	133—138	...
200,000	,,	5	5	Do. 5 p.c. Pref. ...	108—113	...
200,000	,,	5½	5½	Do. 5½ p.c. Pref. ...	118—123	...
200,000	,,	—	16/8§	Do. 4 p.c. Red. Pref.	100—105	...
200,000	June 3	4	4	Do. 4 p.c. Red. Deb.	96—101	...
200,000	,,	3½	3½	Do. 3½ p.c. Red. Deb.	94—99	...

a.—The quotation is per £1 of stock. * Ex. div. † Paid free of income-tax. ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Cont.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Nominal Quotations Sept. 23.	Rise or Fall on Week.
202,152	Sept. 5	5	5	Ascot Ord.	101—106	...
128,182	July 18	5	5	Do. 5 p.c. Pref.	108—113	...
31,035	Aug. 22	–/4⅛	–/4⅛	Associated Utilities 4 p.c. Pref.	16/—18/–	...
100,000	Dec. 13	...	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...
17,000	Aug. 22	8	8	Bognor Orig. Ord. 'A' ...	155—165	...
62,210	,,	8	8	Do. New Addl. 'A' ...	155—165	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	145—155	...
37,440	Aug. 8	10	10	Cam. Univ. & Town 10 p.c. max.	188—198	...
125,970	,,	7	7	Do. 7 p.c. max.	133—138	...
39,025	,,	5	5	Do. 5 p.c. max.	97—102	...
96,410	July 18	4½	4½	Cardiff 4½ p.c. Pref.	95—100	...
150,000	Aug. 8	4	4	Croydon 4 p.c. Pref.	97—100	...
130,000	June 20	4	4	Do. 4 p.c. Deb.	97—102	...
65,000	Aug. 8	8½	7½	Eastbourne 'A' 5 p.c. ...	140—145	...
198,000	,,	7	6	Do. 'B' 3½ p.c.	115—120	...
112,312	,,	5	5	Do. 5 p.c. Pref.	107—112	...
130,000	June 20	5	5	Do. 5 p.c. Deb.	112—117	...
24,000	Aug. 8	8½	8½	Great Yarmouth 8½ p.c. max.	43—48	...
59,400	,,	7½	7½	Do. 7½ p.c. max.	33—38	...
51,160	June 3	5½	5½	Do. 5½ p.c. Deb.	121—126	...
152,600	Sept. 5	9	8	Guildford Cons.	163—168	...
54,055	,,	5	5	Do. 5 p.c. Pref.	107—112	...
68,250	June 3	5	5	Do. 5 p.c. Deb.	107—112	...
156,600	Aug. 22	7½	7½	Hampton Court Cons. ...	131—136	...
80,000	Aug. 8	4	4	Lea Bridge 4 p.c. Pref. ...	94—99	...
60,000	,,	6	6	Do. 6 p.c. Pref.	121—126	...
94,876	June 3	4	4	Do. 4 p.c. Deb.	95—100	...
73,620	Sept. 5	8⅛	8⅛	Luton Cons. 'A'	153—163	...
107,960	Sept. 19	5¼	4	Mid Kent Ord.	8⅛—9¼	...
230,940	Aug. 8	10	10	Oxford & District Ord. ...	195—200	...
47,112	,,	5	5	Do. 5 p.c. Pref.	106—111	...
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	107—112	...
126,193	May 9	7½	7½	Peterborough Ord.	135—145	...
64,990	Sept. 5	6½	7½	Redditch Ord....	118—128	...
166,850	Aug. 8	8	8	Romford Ord....	142—147	...
60,000	,,	4	4	Do. 4 p.c. Pref.	97—100	...
44,000	Sept. 19	5	5	Do. 5 p.c. Deb.	112—117*	+1
25,570	Aug. 8	5½	5½	Rugby 5½ p.c. Pref.	120—125	...
25,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	104—109	...
42,750	June 3	5½	5½	Do. 5½ p.c. Deb.	118—123	...
110,950	Aug. 22	8	8	Ryde Ord.	140—150	...
270,086	Sept 5	7	7	Slough Ord.	128—133	...
21,000	June 20	5	5	Do. 5 p.c. Deb.	110—115	...
28,872	May 9	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	19/—21/–	...
28,866	Sept. 5	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	18/—20/–	...
117,228	Aug. 8	7	5	Swindon Cons.	102—107	...
60,425	June 3	5	5	Do. 5 p.c. Deb.	112—117	...
64,380	June 3	5	5	Torquay & Paignton 5 p.c. Pref.	107—112	...
130,000	Aug. 8	8	5	Wakefield Ord.	116—121	...
81,650	,,	5	5	Do. 5 p.c. max.	100—105	...
82,000	Aug. 8	6	6	Weymouth Ord.	103—108	...
98,384	Aug. 22	6	6	Wolverhampton 6 p.c. Pref.	118—123	...
160,000	June 20	5½	5½	Do. 5½ p.c. Rd. Db.	105—110	...
90,000	June 20	5	5	York 5 p.c. Red. Deb. ...	104—109	...
133,640	July 18	6½	6½	Yorktown (Cam.) 5 p.c. Cons.	118—123	...
120,000	,,	5	5	Do. 5 p.c. Pref.	105—110	...
35,000	June 3	5½	5½	Do. 5½ p.c. Deb.	120—125	...

BRISTOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Sept. 23.	Rise or Fall on Week.
347,756	July 18	6	5	Bath Cons.	118—120	...
1,667,250	July 18	5	5	Bristol, 5 p.c. max.	112—114	...
120,420	June 3	4	4	Do. 1st 4 p.c. Deb. ...	99—101	...
217,870	,,	4	4	Do. 2nd 4 p.c. Deb. ...	99—101	...
328,790	,,	5	5	Do. 5 p.c. Deb.	119—122	...
274,000	Aug. 8	5	5	Newport (Mon). 5 p.c. max....	97—99	...
13,200	Sept. 19	8⅝	7	Pontyp'l Gas & W. 10 p.c. 'A'	12¾—13⅝*	—½
13,600	,,	6	5	Do. 7 p.c. 'B'	11½—12½*	—½
40,000	,,	6	5	Do. 7 p.c. 'C'	11½—12½*	—½
140,778	Aug. 8	5	5	Weston-super-Mare Cons. ...	108—110	...
64,338	June 20	4	4	Do. 4 p.c. Deb.	100—102	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb.	151—154	...

LIVERPOOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Sept. 23.	Rise or Fall on Week.
157,150	Aug. 8	6½	5	Chester 5 p.c. Ord.	109—111	...
92,500	June 20	4	4	Do. 4 p.c. Pref.	95—99	...
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	87—90	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	97—101	...
2,167,410	Aug. 22	6	6	Liverpool 5 p.c. Ord.... ...	121—123	...
245,500	June 20	5	5	Do. 5 p.c. Red. Pref. ...	97—102	...
306,083	July 18	4	4	Do. 4 p.c. Deb.... ...	100—102	...
106,280	Aug. 8	10	10	Preston 'A' 10 p.c.	198—208	...
188,219	,,	7	7	Do. 'B' 7 p.c.	131—141	...

NEWCASTLE EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Sept. 23.	Rise or Fall on Week.
122,577	Aug. 8	8	8	Blyth 5 p.c. Ord.	161—162	...
732,000	Aug. 22	5	5	Hartlepool G. & W. Cn. & New	94—95	...
2,061,315	Aug. 8	5⅛	5	Newcastle & Gateshead Con.	22/6–23/–a	...
682,856	,,	4	4	Do. 4 p.c. Pref. ...	99—100	...
776,706	June 20	3½	3½	Do. 3½ p.c. Deb. ...	88½—89½	...
277,285	May 9	5	5	Do. 5 p.c. Deb. '43 ...	104—106	...
332,351	Aug. 22	6	6	Sunderland 6 p.c. max. ...	135—136	...

NOTTINGHAM EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Sept. 23.	Rise or Fall on Week.
542,270	Aug. 8	9	6	Derby Con.	133—143	...
55,000	June 3	4	4	Do. 4 p.c. Deb.	100—105	...
20,000	June 20	5	5	Long Eaton 5 p.c. Pref. ...	10—12	...
80,000	,,	5	5	Do. 5 p.c. Deb. ...	105—110	...

SHEFFIELD EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Sept. 23.	Rise or Fall on Week.
10,000	Aug. 8	10	10	Great Grimsby 'A' Ord. ...	205—215	...
6,500	,,	10	10	Do. 'B' Ord. ...	205—215	...
79,000	,,	10	10	Do. 'C' Ord. ...	195—205	...
1,806,339	Aug. 22	6½	6½	Sheffield Cons.	129—141	...
95,000	July 4	4	4	Do. 4 p.c. Deb.	101—103	...

a The quotation is per £1 of Stock. * Ex div.

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